UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
WASHINGTON, D. C.

October 13, 1937.

MEMORANDUM FOR MEMBERS OF THE RESEARCH STAFF

We want to get together a statement in outline form of the objectives to which the Biological Survey should set itself in a long-time research program. While it is recognized that we shall probably fall short of foreseeing all of the features that should have attention during the next twenty-five or fifty years, nevertheless it will be helpful to project and visualize as best we can the objectives toward which the Biological Survey should be working. For the present such considerations as amount of money available or to be made available, the type and number of research workers that should be employed may be left out of the picture.

In working out such a long-time projection of the research program for the Biological Survey, I wish the suggestions of all members of our research staff who have ideas to propose. We want to throw all of our ideas into one hopper out of which may come a long-time program toward which the research staff of the Biological Survey may be unitedly striving. Such a coordinated word picture may be exceedingly useful at this time when planned programs are the order of the day.

If you have a generalized conception of such a program or if you have just one pet idea to propose as a part of the outline, please let us have it. Your proposals may be within your present lines of work or any other in the biological field appropriate for the Biological Survey as a Federal research agency. I shall appreciate having your suggestions on or before November 1, 1937.

W B Bell

Chief, Wildlife Research.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

ALASKA GAME COMMISSION
JUNEAU, ALASKA

November 12, 1937

Mr. Irving McK. Reed
Chairman, Alaska Game Commission
Fairbanks, Alaska

Dear Mr. Reed:

Herewith is the preliminary draft of the "Progress Report on Alaska Wildlife Resources" as prepared by Mr. Crouch for submission to the Federal Alaska Wildlife Resources Committee.

You will note that it follows very closely the rough draft prepared by me, copy of which was mailed you on October 14th.

Very truly yours,

FRANK DUFRESNE
Executive Officer

FD/VB

Encls.

cc-Mr. Palmer

Palmer

October 30, 1937

Preliminary Draft of Progress Report
on Alaska Wildlife Resources

I. Appraisal of wildlife resources

A. Available data

1. Surveys and records

(a) Records of furs shipped from Alaska since 1912.
(b) Record of game and fur taken by licensed trappers and hunters.
(c) Record of purchases by fur dealers in Alaska.
(d) Estimates covering wildlife species in certain areas of Alaska.
(e) Maps showing Wildlife Refuges, National Forests, National Parks and Monuments, and other reservations in which wildlife is given protection.
(f) Maps showing general range of species of wildlife.

The above records and maps are available and can be reproduced in the report.

2. Legislation

(a) Act of 1868 protecting wildlife.
(b) Fur and Game Law of 1902.
(c) Alaska Game Law of May 11, 1908.
(d) Act of March 4, 1911 covering game birds, waterfowl and shore birds.
(e) Act of May 31, 1920 transferring protection of land fur-bearing animals from Department of Commerce to Department of Agriculture.
(f) Alaska Game Law of 1925.

A synopsis of these laws will be given.

B. Status of wildlife resources

Big game animals, notably the large brown and grizzly bears, moose, and mountain goats are slightly increasing in numbers under present usage, while other species such as mountain sheep and caribou are decreasing on account of several causes, the most important of which is probably the depredations among them by wolves and coyotes.

Native game birds of the grouse family have increased in large numbers and are not materially affected by man but suffer periodically from the deadly epizootics which reduce them as well as the snowshoe hare and certain small rodents to the vanishing point about every 9 years.

At the present time fur animals of Alaska are being cropped as closely as appears consistent with maintaining a safe breeding supply. Reports on the export commerce of Alaska for the fiscal year ending June 30, 1936, places fur skins third of all commodities in Alaska as to total value. The annual fur production in Alaska for that fiscal year amounted to $2,264.467. This annual production of furs is divided among about 8,000 trappers, a substantial majority of which are natives or of native extraction.

Fur farming is an important and valuable adjunct to the production and conservation of fur animals. The raising of foxes and minks has become a well established industry in Alaska and is increasing each year. The Territory is naturally adapted to raising fur animals and it is well known that the pelts produced in Alaska are as fine in quality as any produced elsewhere.

C. Conditions and tendencies influencing wildlife in Alaska.

Under this heading it is proposed to discuss how wildlife is affected by

(1) Distribution of population.
(2) Methods of trapping, marketing, and mode of living of the natives.
(3) operations of tourists, prospectors, and traders.
(4) Increased population.
(5) Reindeer industry.
(6) Use of the ranges.

II. Problems

A. Investigational

Because it is a pioneer country covering a large territory investigations must of necessity play a leading part in any Alaskan program for many years to come. It is astonishing how little is known regarding the various game ranges, fur producing regions and the localities covered by vast breeding grounds seasonally occupied by ducks, geese, and other migratory waterfowl. Alaska's share in providing

incubation facilities for migratory waterfowl probably has never been fully appreciated. It will take investigational surveys of wide scope to determine the extent the Territory plays in maintaining the waterfowl population of North America. These investigations should be of such a nature as to make it possible to determine the best means of maintaining and developing the wildlife resources of the Territory as well as be of scientific nature.

As more or less regular intervals of about 9 years deadly epizootics appear among the rabbits, grouse, and ptarmigan of Alaska, reducing them somewhat to the vanishing point, then gradually through the intervening years the survivors build themselves up to large numbers only to be reduced again after a lapse of time. During the periods of abundance these rabbits and birds are primarily responsible for large fur yields, and in addition they furnish a valuable meat supply to the natives and white settlers. The effect of these cycles on the fur-bearers, such as foxes, minks, marten and ermine is thoroughly attested by the downward and upward trend in their numbers in sympathy with the rabbit and grouse population. It is felt that a study of this situation might result in knowledge whereby some measure of control may be instituted.

It is known that damage is being done to valuable species of big game animals and game birds by wolves and coyotes. The coyote has begun to range over the wild duck and geese nesting area with serious results. Damage is also being done among the reindeer herds of the Bering and Arctic sea coast, particularly in the herds owned and controlled by native Eskimos who have become dependent on these animals for their existence. It is important, therefore, that investigations be carried on to determine the extent of this damage and what measures can most satisfactorily be used to control the predatory animals.

B. Legislative

The present Alaska Game Law, which has been in effect for 12 years with but minor amendments, comes very near to being a satisfactory instrument for the proper maintanance of wildlife in the Territory. Slight changes, however, are advisable in order to keep pace with current developments. Territorial legislation to permit the initiation of a better system for wolf and coyote control should be considered.

Costly experiments with the bounty system over a period of many years in Alaska have failed to bring satisfactory results.

C. Administrative - Jurisdictional

The machinery for the proper protection of Alaska's wildlife resources is quite well provided under the Alaska Game Law, but necessary funds for adequate administration of this law have never been supplied. The present force of wardens should be increased, and headquarters buildings, boats, and patrol vessels should be provided in order to bring about a better law enforcement progress. Airplanes are needed more than any other form of transportation for law enforcement. The rapid advancement of aerial travel in Alaska is a well known fact, and people there resort to travel by airplane in as common place a manner as one would board a train in the states/ If the law enforcement officers are to keep step with the movements of hunters, trappers, and fur dealers, it is essential that they too take to the air. To a limited extent this need has been met by chartering privately owned planes, and while this is an improvement over the slower method of travel, it is not flexible enough to render efficient patrol service. For these reasons it is advisable that the Alaska Game Commission, charged with the enforcement of the Alaska Game Law, be provided with its own airplanes.

Although the enactment of recent legislation has for its purpose the restoring of reindeer to the native Eskimo tribes, there is no doubt that the management of these herds will continue to infringe itself on purely wildlife matters, such as predatory animal control and the protection of neighboring caribou herds.

It is believed proper to mention sea otter protection in the waters of the Aleutian Islands and elsewhere in Alaska. It is believed that enough data has been gathered in the past few years to fully substantiate the contention that these animals are not palagic but closely confined to the shores well within the 3 mile limit. Since the Aleutian Islands are under the jurisidction of the Department of Agriculture it would appear that some satisfactory arrangement should be made whereby that Department might be placed in a position to give protection to the sea otter in the vicinity of the Aleutian Islands.

It might not also be amiss to here mention that more protection for whales and walus should be considered.

D. Budgetary

Under this heading definite estimates will be given to provide for the following:

(1) Adequate personnel and equipment for enforcement of Alaska Game Law.
(2) Funds necessary to carry on needed research on wildlife in Alaska.
(3) Funds for restocking of native game and fur-bearers.
(4) Funds necessary for predatory animal control.

III. Recommendations

A. Research and surveys proposed

There is a gradually diminishing supply of furs from the wild, not only in Alaska, but elsewhere, and in order to help conserve and build up this supply, a careful research is desirable. This should cover a study of such phases as supply of fur, methods of trapping and handling, regulatory laws and their effect, protection for fur-bearers, marketing, and the commercial aspect in general. Included in this research should be a study for the purpose of bringing about better situations as far as fur production is concerned among the natives for their benefit as well as the benefit of fur-bearers.

Fur farming in Alaska is only of comaratively recent development, and there is less authentic information available concerning it than for any other branch of animal production. Surveys should be made of fur farming regions in the Territory, species and numbers of breeding animals on islands and on farms, the annual production of pelts, and methods of marketing. This survey would be made for the purpose of obtaining authentic knowledge of the business so that action may be taken to expand and develop the industry along intelligent lines.

A reconnaissance survey and research should be undertaken in the ranges of big game, upland game, and fur-bearers in Alaska. The food and vegetative cover type should be mapped, preferably by means of aerial photographic surveys, followed by reconnaissance work by field parties. Information should be obtained regarding present numbers of each species, their food and cover requirements, feeding and breeding habits. In this work attention should be given to moose on the Kenai Peninsula and to fur-bearers, Dall's bighorn and mountain goat.

Studies also should be made concerning the interrelations of wildlife to forests, predatory species, livestock grazing, and other land use practices to determine the best practices for maximum production of food, fur and recreation. Information gained by these surveys would be indispensable in the development and management of Alaska's wildlife resources and would make possible intelligent formulation of plans for the best utilization of these resources.

Food habits and other studies should be made to determine policies and administrative action for the control of predatory species. In this work attention should be given particularly to the wolf and coyotes as they affect wild game and the reindeer industry, brown bear as regards to depredations on livestock, beavers in their relation to salmon spawning, and the bald eagle in relation to the salmon and fur farming industries.

In the Territory of Alaska are found some of the most important breeding grounds for migratory waterfowl coming under the jurisdiction of the United States. The aggregate number of ducks and geese utilizing Alaskan breeding grounds undoubtedly compares favorably with other regions of similar size anywhere on the continent. Unfortunately specific information on these areas is lacking, and it is obvious that carefully planned and executed surveys would be of maximum value in the restoration of waterfowl. Such a survey should include not only the determination of the abundance of the different species but also the factors that influence the production of large crops of ducks and geese. This research should also include a study of the food resources in Alaska available to waterfowl. Also much knowledge of the flight of migratory waterfowl to and from Alaska could be gained by the banding of ducks, geese and other migratory birds on the nesting areas.

Introductions of elk, buffalo, and other species into Alaska have been made, but comparatively little definite knowledge of the success or failure of these enterprises is available, particularly with regard to the introduction of elk and buffalo. A study should be made in order to determine present numbers of these animals and management problems with a view to guidance in future introductions and management of the animals already introduced.

As a basis to determine scientific phases for the administration of all wildlife forms in Alaska, a general survey of the life zones of all species of birds and mammals in the Territory is desirable. For the purpose

of assisting in economic studies, such as food habits, inter-relations of species, depredations, and many other highly important economic factors, it is essential to have a knowledge of the distribution and habits of all vertebrate life in the Territory as well as such forms as may be considered game, fur-bearers, or predators. This type of investigation is in line with studies long conducted by the Biological Survey in the United States and which have proved of utmost fundamental importance as a basis for administration of wildlife in general.

Since rabbits and other rodents, as well as ptarmigan and grouse, are important foods for fur-bearers in addition to supplying human needs, it is important to ascertain by careful research the reason for their sporadic disappearance. A solution of this mystery might go a long way toward maintaining a higher level in the numbers of those fur-bearers which are dependent upon these forms of life.

It is thought advisable to carry on investigations to determine the possibility and effectiveness of land reserves for natives of Alaska comparable to reserves in northwestern Canada in which harvesting of wildlife by white men is forbidden and made available to the natives.

B. Legislation suggested.

While the present Alaska Game Law is satisfactory in most respects, it is suggested that some amendments to the law be made in order to make it more adequately fit for present conditions in Alaska. These proposed amendments are now before Congress for consideration. If thought advisable, these suggested amendments can be given in detail in the final report.

The present Territorial law covering bounties on wolves and coyotes is not entirely satisfactory and has failed to bring about the desired results. If bounties are to be continued in the Territory, it is suggested that changes in the law be made to meet some of the most outstanding objections. These suggested changes can be given in detail in the final report. Also it is suggested that Territorial legislation be enacted to permit the initiation of a paid hunter system for wolf and coyote control in certain areas in Alaska where this system can be satisfactorily used.

C. Administrative

The Territory of Alaska, which embraces an area of more than 586,000 square miles, is about 1/5 the size of the continental United States, and nearly equals in extent

the combined area of Montana, Wyoming, Colorado, New Mexico and Arizona. At the present time there are only 12 game wardens to cover this vast area, making it necessary for each one of the wardens to police at least an area of 50,000 square miles. At least 6 more wardens are needed, together with headquarters buildings to house these officers and equipment necessary for their travel.

In order to police this vast territory, it is advisable that the Alaska Game Commission be provided with two airplanes. Oddly enough the operation of airplanes by the Commission would effect real economy by a savings in time. This fact has been thoroughly demonstrated by a record of expenditures during the past several years. Airplanes would also be desirable in the protection of wildlife by the National Park Service within National Parks and Monuments. The moral effect also of Government owned planes would have a beneficial reaction in discouraging poachers and lawlessness in outlying sections. Landing fields are being built all over the Territory and combined with the thousands of lakes and rivers accessible to pontoon planes it is possible to reach every part of the Territory during the summer season. During the winter season when snows blanket the ground, conditions for operating planes are even better than in the summer. Equipped with skiis the airplanes can land practically anywhere in the Territory during the winter months.

It is recommended that a predatory animal hunter system be employed in the Territory to control wolves and coyotes where they are a serious menance to reindeer and wildlife and where this system of control is practicable. It is also suggested that in areas where the employment of paid hunters is not practicable that instructions and demonstrations be given to natives and other local trappers to teach them the best methods in catching these predators.

It is thought that better conditions can be brought about in the waterfowl nesting areas of Alaska. Adequate investigations would determine what might be done in this respect.

There are areas in Alaska ideally suited to the propagation of large numbers of valuable game animals, game birds, and fur-bearers which, at the present time, are not populated with these species because of the fact that encompassing glaciers, impassable mountain ranges, bodies of water, and other natural impediments have prevented the occupation of these areas by forms of wildlife. It is,

therefore, suggested that after investigation to determine possibilities, these areas be stocked with suitable forms of native wildlife.

Well located refuges in the Territory to provide sanctuaries for valuable species of wildlife no doubt would do much toward perpetuating the species and maintaining their numbers. These refuges would assure breeding stock for surrounding areas. The establishment of such areas, therefore, should be given consideration in the program for development of wildlife resources of the Territory.

In order that the natives of Alaska may be assured a livelihood, it is proposed that special wildlife reservations be established and a systematic cropping of wildlife on these areas be instituted for the benefit of natives only. Before such areas are established however, investigations would have to be made to determine the practicability and feasibility of such a program.

Much can be done in conserving wildlife of Alaska by teaching the natives the best methods of catching furbearers, handling the furs and marketing them. An educational program of this nature could be worked out between the Biological Survey, Alaska Game Commission, and the Bureau of Indian Affairs.

Fur farming can be a means of conserving wild furbearers and, therefore, encouragement should be given to the commercial production of furs of Alaska.

Under present conditions there is a likelihood that reindeer and caribou will interbreed to such an extent that there may be danger to the preservation of the caribou as a species. The management of the reindeer herds in Alaska, therefore, should take under consideration the maintaining of these species in separate status as far as practicable.

Alaska Wildlife Resources Committee:

_____ Dr. Ira N. Gabrielson, Chief Biological Survey, Chairman.

_____ Victor Cahalane, Representing National Park Service.

_____ Dr. H. L. Shantz, Representing Forest Service.

_____ J. C. McCaskill, Representing Bureau of Indian Affairs.

_____ W. E. Crouch, Representing Alaska Game Commission.

_____ Capt. W. H. Hunter, Representing U. S. Coast Guard.

C O P Y

February 6, 1937

MEMORANDUM FOR MR. HEINTZLEMAN

ALASKA FOREST & RANGE EXPERIMENT STATION

(Suggestions as to Program)
(In cooperation Forest Service & Biological Survey)

NOTES

Headquarters at Juneau or Anchorage
Branch stations for field observations at Kenai Pe., Palmer, Fairbanks, Nome and Alaska Pe.

Projects

(1) Forest and Range Inventory
Topographic map --air photography
Cover survey--timber and forage
Survey of lands suitable for cultivation

(2) Fire prevention and control in interior

(3) Grazing investigations
Reindeer--Bering Sea--Arctic Coast
Restoration of depleted range
Management methods
Relationships to interior caribou
Cattle and sheep
Kodiak Island, Aleutian Islands and Alaska Pe.
Development of present production
Mantanuska Valley and Kenai Pe.
Development in connection colonization project
Tanana Valley

(4) Fur farming investigations

(5) Wildlife investigations
Big game management
Establishment of management areas
Interior--buffalo
Interior--mountain sheep and goats
Interior--caribou
Kenai--moose
Southern--brown bear
Other
Predatory animal control
Coyote and wolf
Waterfowl
Control and management of nesting areas, Yukon Delta, Upper Yukon Flats, etc.
Furbearers
Control and management of breeding areas

(6) Forest investigations

Management of interior forested area
Industrial study and management of coastal forests

(7) Entomological investigations

Mosquito control
Reindeer and caribou warblefly eradication
Rabbit and grouse parasitism and disease
Parasites of game and fur animals

NOTE: The Alaska range or main area of Alaska comprises about 300 million acres, which is almost half that of the western range area of the continental United States. It is the largest area remaining in the possession of the United States of wildlife importance and natural conditions offering unusual possibilities for future recreational and other developments.

/s/ L. J. PALMER

August 5, 1937

Director,
Rocky Mountain Forest & Range Experiment Station,
Fort Collins, Colorado.

Dear McArdle:

I believe all that I am charged with at the Rocky Mountain Station is a book of transportation requests and an identification card. I have the book of transportation requests but must report the loss of the identification card. I carried this in a card fold along with some membership cards. Last Sunday on a trip to Gettysburg I had the fold in my inside coat pocket. Stopping along the road to shed my coat, the fold must have dropped out of the pocket somehow because later upon returning to Washington I discovered the cardfold to be missing. Is there a form on which to report this loss? If so, please send me one to fill out if this be necessary.

Very sincerely yours,

L. J. PALMER
Prin. Forest Ecologist.

A Forest and Range Experiment Station for Alaska is authorized by the McSweeney-McNary Act of May 22, 1928 (45 Stat. 699; Sec. 581a, Title 16, U. S. Code).

Alaska has a gross area of 586,000 square miles and is thus one-fifth the size of continental United States. Conservative estimates show that as much as 470,000 square miles, or roughly, 300 million acres, supports forest, grass and tundra vegetation of present and prospective economic importance. This acreage is almost half that of the western range area of continental United States. It is the largest area remaining in the possession of the United States of wildlife importance and natural conditions offering unusual possibilities for future recreational and other developments. The south coast has 6 million acres of heavy spruce and hemlock forest capable under proper forestry treatment of supplying the Nation with 1,000,000 tons of newsprint per year in perpetuity, but still awaiting development. The vast interior region contains not less than 40 million acres of dense forest of small trees that can contribute materially to the home-making needs of a large future local population. Open woodland and grass lands aggregating at least 154 million acres are available throughout the Territory to support unequaled herds of big game animals for the enjoyment of the Nation's sportsmen as well as to maintain domestic livestock enterprises; 100 million acres of tundra vegetation in the extreme north and west can provide the basis for an expanded and stabilized reindeer industry that will improve the lot of the local Eskimo population. A great variety of important fur-bearers occur throughout the Territory, furnishing an annual take of pelts valued at millions of dollars. Key nesting areas for migratory waterfowl are found on such major areas as

the Yukon Delta, Upper Yukon Flats, Arctic tundra and on numerous islands which help greatly to maintain the present supply which furnishes sport to the people of continental United States.

It is estimated that the present reindeer herds number over one million animals. Three major caribou herds number at least two million animals. Other big game animals, such as, moose, bear, mountain sheep and goats and deer aggregate fully another one million animals.

The social and economic welfare of the Territory is in large measure bound up with the manner in which this vast empire of timber and range land is to be used and the extent to which it is to be protected from fire. Planned programs of study should be started to determine the basic information needed for growing of timber as a crop, such as rate of growth, insect and disease control, method of harvesting and methods of natural reproduction under varying conditions; for maintaining and improving the character and volume of forage crops on the range lands and increasing the numbers of the more desirable game animals and fur-bearers; for developing suitable management of reindeer, cattle and sheep grazing; for controlling the very destructive forest, grass and timber fires that now occur in interior and northern Alaska.

For further information there is attached a copy of Separate No. 17 from Senate Document 199, "The Western Range A Great But Neglected Natural Resource," and copy of a short memorandum dated February 6, from L. J. Palmer to Mr. Heintzleman outlining some projects he thought desirable in a program for a Forest and Range Experiment Station in Alaska.

ROCKY MOUNTAIN FOREST & RANGE EXPERIMENT STATION

R - RM
Supervision
Designation or Subject

April 9, 1937

MEMORANDUM FOR Mr. Palmer

Since the time is drawing near for you to leave the station it may be well for me to say definitely what work I expect you to complete before leaving here.

I shall be more than satisfied if you will finish before you leave (1) the report on the range resources in Colorado and (2) the 10-year program for range research requested by Mr. Marsh.

By completing the report on range resources I mean to finish the final draft of the report, complete with all necessary tables and figures and to have it in such shape that it can be mimeographed. We will attend to proof reading the mimeograph stencils but must have a clear draft if you expect us to do this. The tables and text must be in acceptable form. This manuscript should be o.k.'d by me and then by both Nelson and Douglas. After Nelson and Douglas have made suggestions, you and I should talk about it again and decide which of these suggestions to adopt. Finally, I should read the draft in finished form before you leave here. I am making this specific because a verbal understanding regarding the draft of this report which you prepared before leaving for Washington last November did not seem to work out. By "completion" of this manuscript I mean that it has my final o.k. for mimeographing before you leave Fort Collins.

My comments on your preliminary draft of the 10-year program are attached to that manuscript.

RICHARD E. McARDLE,
Director.

RED

JUNEAU ALS OCT 10 1937

DEPARTMENT AGRICULTURE
BUREAU BIOLOGICAL SURVEY
WASHINGTON DC

RE AIRMAILED INSTRUCTIONS PROCEDURE FOR ALASKA STUDY SHALL I FOLLOW UP WITH SECOND SET MATERIAL OR WILL THAT BE HANDLED IN BUREAU STOP IF DESIRED FROM HERE WILL APPRECIATE ANY NEW INFORMATION NOW AVAILABLE

DUFRESNE

Dept Agl.

BLACK - BUSH

ALASKA GAME COMMISSION

Juneau, Alaska, October 9, 1937

BIOLOGICAL SURVEY
AGRICULTURE
WASHINGTON D C

RETEL EIGHTH SIGNED HENDERSON AIRMAIL REPORT PREPARED YESTERDAY LEAVING HERE FOR SEATTLE PRIVATE PLANE FIRST BREAK IN WEATHER ALSO COPY GOING REGULAR STEAMER TONIGHT SHOULD REACH THERE FOURTEENTH STOP SUMMARY PROJECTS FOLLOWS COLON PROJECT ONE WOLF COYOTE CONTROL PAID HUNTER SYSTEM COST ONE HUNDRED FORTY THREE THOUSAND MAN YEARS FIFTYFIVE PROJECT TWO ADDITIONAL ENFORCEMENT GAME LAWS COST ONE HUNDRED SEVENTY NINE THOUSAND SIX HUNDRED MAN YEARS TWELVE PROVIDING SIX ADDITIONAL WARDENS TRAVEL EXPENSE HEADQUARTERS BUILDINGS BOATS AUTOMOBILES PURCHASE AND OPERATION TWO AIRPLANES PROJECT THREE CONTINUATION ALEUTIAN SURVEY COST FORTY FIVE THOUSAND MAN YEARS EIGHTEEN INCLUDES OPERATION COSTS BROWN BEAR SALARY EXPENSES BIOLOGISTS PROJECT FOUR SURVEY BIG GAME RANGES DUCK NESTING AREAS COST FIFTY THOUSAND MAN YEARS TWENTY PROJECT FIVE BROWN BEAR DEPREDATIONS KODIAK COST TWENTY THOUSAND MAN YEARS FIVE SURVEY ISLAND CONDITIONS ORDER DETERMINE IF ATTEMPTED CATTLE RAISING ON GROWING SCALE CAN BE RECONCILED WITH MAINTENANCE PRESENT NUMBER BEARS ON ISLAND PROJECT SIX TRANSPLANTING GAME FUREARERS COST FORTY THOUSAND MAN YEARS TWELVE PROJECT SEVEN SURVEY BEAVER AREAS NUSHAGAK VALLEY COST FIFTEEN THOUSAND MAN YEARS FIVE OBJECT DETERMINE WHETHER ABUNDANT PRESENCE BEAVERS INIMICAL OR FRIENDLY TO SPAWNING RED SALMON PROJECT EIGHT KENAI MOOSE CENSUS AND STUDY COST TWENTY THOUSAND MAN YEARS NINE IMPENDING COLONIZATION KENAI FORCES SPECIAL PROTECTIVE MEASURES IF PRESENT MOOSE HERD BE MAINTAINED PROJECT NINE BIRD BANDING COST TWENTY THOUSAND MAN YEARS SIX PROJECT TEN COST TWENTY FIVE THOUSAND MAN YEARS SIX STUDY RABBIT GROUSE EPIZOOTIC

Form 125K

SIGNAL CORPS, UNITED STATES ARMY

WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM

TELEGRAM

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FRANK DUFRESNE

79 ALASKA GAME COMMISSION JUNEAU

RETEL TENTH APPRECIATE YOUR FOLLOWING UP WITH SECOND SET MATERIAL SOON AS POSSIBLE TO BE USED AS BASIS REPORT WHICH WILL BE PREPARED IN BUREAU STOP NO NEW INFORMATION NOW AVAILABLE

HENDERSON

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ALASKA GAME COMMISSION RECD OCT 12 1937 JUNEAU

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SIGNAL CORPS, UNITED STATES ARMY

WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM

TELEGRAM

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FRANK DUFRESNE

180 ALASKA GAME COMMISSION JUNEAU ALS

WIRE WHEN AIR MAIL REPORT REQUESTED BY GABRIELSON SEPT THIRTIETH WILL REACH WASHINGTON STOP SEND WIRELESS SUMMARY YOUR REPORT AS SOON AS POSSIBLE STOP PROJECT MAY INCLUDE EXPANSION WORK CARRIED ON UNDER REGULAR APPROPRIATIONS HENDERSON

417P

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OCT 8 1937

Form 125K

SIGNAL CORPS, UNITED STATES ARMY

WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM

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FRANK DUFRESNE 24

JUNEAU ALS

RETEL OCTOBER ONE NO FUNDS YET SET UP STOP YOU SHOULD OF COURSE SUBMIT ONLY WORTHWHILE PROJECTS BUT COST MAY AMOUNT TO FIVE HUNDRED THOUSAND DOLLARS WITHOUT REGARD COST FOREST SERVICE PROJECTS

GABERLSON

810A

ALASKA GAME COMMISSION
JUNEAU, ALASKA
OCT 2 1937

COPY

WASHINGTON D.C. OCTOBER 2, 1937.

FRANK DUFRESNE
JUNEAU ALASKA

RETEL OCTOBER ONE NO FUNDS YET SET UP STOP YOU SHOULD OF COURSE SUBMIT ONLY WORTHWHILE PROJECTS BUT COST MAY AMOUNT TO FIVE HUNDRED THOUSAND DOLLARS WITHOUT REGARD COST FOREST SERVICE PROJECTS.

GABRIELSON.

COPY

WASHINGTON D.C. OCTOBER 2, 1937.

FRANK DUFRESNE
JUNEAU, ALASKA

RETEL OCTOBER ONE NO FUNDS YET SET UP STOP YOU SHOULD OF COURSE SUBMIT ONLY WORTHWHILE PROJECTS BUT COST MAY AMOUNT TO FIVE HUNDRED THOUSAND DOLLARS WITHOUT REGARD COST FOREST SERVICE PROJECTS.

GABERLSON.

RED

Juneau, Alaska October 1, 1937

BIOLOGICAL SURVEY
AGRICULTURE
WASHINGTON D C

RETEL THIRTIETH SIGNED GABRIELSON IN PREPARING BUDGETARY REQUESTS FOR WORK NECESSARY WILDLIFE INTERESTS WHAT IS LIMIT OF FUNDS STOP DO SUCH FUNDS COME FROM FOREST SERVICE SHARE APPROXIMATELY FIVE HUNDRED THOUSAND OR WILL IT BE SET UP SEPARATELY

DUFRESNE

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SIGNAL CORPS, UNITED STATES ARMY

WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM

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Hendrickson
Warden
Palmer
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GAME COMMISSION OCT 1 1937 ALASKA

RECEIVED AT 172 D RW 165 AGL WASHINGTON DC 440P SEPT 30 1937

FRANK DUFRESNE

110 JUNEAU ALS

FOLLOWING TELEGRAM SENT FROM ACTING CHIEF FORESTER TO REGIONAL FORESTER JUNEAU QUOTE FORWARDING AIR MAIL TODAY COPY PROPOSED PROCEDURE ALASKA STUDY UNDER CONCURRENT RESOLUTION TWENTY FOUR STOP NATURAL RESOURCES COMMITTEE DESIRES BY OCT FIFTH A LIST OF BUDGETARY REQUESTS FOR PUBLIC WORKS FISCAL YEAR NINETEEN THIRTY NINE AS HITHERTO SUBMITTED ... OR NOW DESIRED SO AS TO PROVIDE PRESIDENT AND BUDGET BUREAU WITH AS NEARLY COMPLETE A PICTURE AS POSSIBLE OF TERRITORYS NEEDS STOP FOREST SERVICE SHARE THEREIN MIGHT TOTAL APPROX-IMATELY FIVE HUNDRED THOUSAND DOLLARS STOP PLEASE AIR MAIL ITEMIZED LIST PROJECTS IN PRIORITY ORDER SHOWING COST CHARACTER OF WORK VALUE..

Form 125K

SIGNAL CORPS, UNITED STATES ARMY

WASHINGTON-ALASKA MILITARY CABLE AND TELEGRAPH SYSTEM

TELEGRAM

GOVERNMENT PRINTING OFFICE 63—6481

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TO END BEARING ON DEVELOPMENT OF TERRITORY AND MAN YEARS EMPLOYMENT FURNISHED STOP IN PREPARANG YOUR ESTIMATES BE SURE TO COLLABORATE WITH OTHER AGRICULTURE DEPT AGENCIES UNQUOTE Stop PLEASE CONFER WITH HEINTZELMAN SECURE COPY OF MATERIAL BEING SENT HIM BY AIR MAIL AND WORK JOINTLY WITH HEINTZELMAN IN PREPARING BUDGETARY REQUESTS FOR WORK NECESSARY TO WILDLIFE INTERESTS STOP PROJECTS FOR RESEARCH AND SURVEYS MAY BE INCLUDED

GABRIELSON

403P

RED

Juneau, Alaska October 1, 1937

BIOLOGICAL SURVEY
AGRICULTURE
WASHINGTON D C

RETEL THIRTIETH SIGNED GABRIELSON IN PREPARING BUDGETARY REQUESTS FOR WORK NECESSARY WILDLIFE INTERESTS WHAT IS LIMIT OF FUNDS STOP DO SUCH FUNDS COME FROM FOREST SERVICE SHARE APPROXIMATELY FIVE HUNDRED THOUSAND OR WILL IT BE SET UP SEPARATELY

DUFRESNE

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Juneau, Alaska October 1, 1937

BIOLOGICAL SURVEY
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DUFRESNE

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COPY

WASHINGTON DC SEPTEMBER 30, 1937

FRANK DUFRESNE

JUNEAU, ALASKA

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GABRIELSON

NATIONAL RESOURCES COMMITTEE
INTERIOR BUILDING
WASHINGTON

September 20, 1937

PROPOSED PROCEDURE FOR ALASKA STUDY

Undertaken Pursuant to Concurrent Resolution No. 24

1. Organization:

a) Washington Bureaus: It is proposed to request Federal Bureaus concerned with Alaska to prepare basic material, statements and recommendations in two major sections as outlined below. This material would then be put together through a "Federal Alaska Committee," under the chairmanship of Mr. Paul W. Gordon of the Division of Territories.

b) Territorial Officials: The views and cooperation of Territorial officials will be requested through the Territorial Planning Council of Alaska and Governor Troy.

c) An advisory or partly non-governmental reviewing committee is proposed to put together and finally sponsor the report to be transmitted to the President.

II. Immediate Request:

The Federal bureaus are urgently requested to prepare two sets of material at the earliest possible date.

The first set to deal with budgetary requests for public works for the fiscal year 1939, (both submitted and desired) so as to provide the President and the Bureau of the Budget with as nearly complete a picture as possible of the needs as far as Public

Works are concerned in the Territory. To be useful to the Bureau of the Budget, the material should be in the hands of the Federal Alaska Committee not later than October 5.

The second set would provide data for a progress report to be submitted to the President not later than January 1, 1938, patterned in general on the National Resources Board Report of December 1, 1934. For this second set of material a general division of subjects to be covered will be agreed upon at the meeting and assignment made to individual bureaus or subcommittees for the preparation of statements concerning:

1) Population
2) Mapping and charting
3) Climatology
4) Agriculture
5) Water, including hydroelectric power
6) Forests
7) Minerals
8) Wild Life
9) Recreation
10) Fisheries
11) Transportation
12) Communication

This list to be revised after discussion with the bureaus concerned.

It has been suggested that under each of these headings a statement might be divided in accordance with the following outline

and include at least reference to the subjects noted below:

Draft Outline for Statements

1. Appraisal of Resources:

   a) Available Data - Surveys, Mapping, and Legislation

   b) Status of Resource or Activity - Appraisal and Present Development

   c) Possibilities and Progress

2. Problems:

   a) Investigational

   b) Legislative

   c) Administrative - Jurisdictional

   d) Budgetary

   e) Investment

3. Recommendations

In order to meet necessary deadlines for preparation and clearance of the report, these statements on the resources and problems would have to be in our hands not later than October 20.

In addition to the foregoing material, each bureau or independent agency concerned with Alaskan activities is requested to prepare a brief statement of not over 500 to 1,000 words outlining its authority, functions and activities in Alaska, showing the number of personnel, annual Alaska expenditures and other material for approximately a ten year period.

Finally, a statement of a group of special studies suggested to the staff of the National Resources Committee in correspondence in

the last few weeks is attached for further consideration of the Federal Alaska Committee. Suggestions for these or other studies would be appreciated.

June 6, 1938

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Mr. Gabrielson:

Reference is made to Mr. Jackson's memorandum of May 3rd.

I have just returned to Juneau following a two months study of the moose on Kenai Peninsula. Delay in replying to Mr. Jackson's memorandum is occasioned by my late return from the field.

During the past year I have worked on two projects, namely, the Southeastern Alaska deer situation and the Kenai moose management problem. Both were preliminary surveys, looking to more comprehensive and continued study in the future. One month was spent in the field investigating deer in Southeastern Alaska. This was largely in the form of a survey of the situation, and more detailed observations must follow. Progress reports on this investigation were submitted. The study of the Kenai moose has been outlined. Two months of field work have just been completed. A report has been written and is now being typed in final form.

For the next year our efforts will be confined largely to three major projects; namely,

1. Investigation of the muskoxen and carideer situation on Nunivak Island;

2. Investigation of the cattle raising-fish spawning-brown bear controversy on Kodiak Island; and

3. Continued investigation of the Kenai moose problem.

Your office has already been advised of the muskoxen situation on Nunivak Island. Complaints are being made by

the native inhabitants of destruction and terrorizing of camps and villages by the muskoxens. The Bureau of Indian Affairs requests that some action be taken. Furthermore, the CCC is to build corrals for us on the island and Mr. Burdick, who is in charge of the CCC for Alaska, desires my presence on the island in July to supervise initial construction, or at least to indicate site and form of construction.

Protests have been coming in now for several years from Kodiak Island that brown bears are killing off the cattle and interferring with the spawning of fish in the streams. Beavers are also accused of interferring with fish spawning. Complaints have been especially strong the past year. Accordingly, the Alaska Game Commission has promised initial investigation this summer, and I am "elected for the job."

The Kenai moose project is a continuation of the studies begun this year, particularly with a view to observations of rutting in the fall.

A fourth project, in which we are acting merely in an advisory capacity, is the removal of fencing and two shelter barns from the former station site at Fairbanks. This work is to be done by CCC labor, and will probably be started this month.

The three major projects outlined herein all require full attention, but without assisting personnel it will be impossible for me to do other than preliminary work on each. I shall have to divide my time between them as best I can, but it is going to "keep me hopping" to do so. I need at least three permanently assigned technical assistants -- one for the Kodiak job, one for Kenai, and one for Nunivak, the Southeastern Alaska deer problem, and such other projects as develop. My task should be general supervision, with time enough to get around and observe the wildlife situation in Alaska as a whole. Several full seasons of work will be needed for each major project. I can't do it alone. As it is, I am so tied down now that I cannot afford to break away for trips with others such as Mr. Heintzleman and Dr. Shantz, who have so requested. There are other people I should be getting around with, but being alone and with the pressure of immediate projects I am decidedly handicapped.

Very truly yours,

L. J. Palmer
Principal Biologist

LJP/VC

Mr.L. J. Palmer

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
WASHINGTON, D. C.
May 3, 1938.

Keep to Show.

MEMORANDUM FOR PERSONNEL IN THE SECTION OF WILDLIFE SURVEYS

In order that we may have the program of work set up and mimeographed as soon as possible after the beginning of the fiscal year 1939, outlines for your program should be submitted to this office not later than June 1, 1938. A brief resume of all projects now in progress should be given; new projects, however, should be outlined in more detail.

Please give this matter your usual, prompt attention.

Sincerely,

H. H. T. Jackson.

H. H. T. Jackson, In Charge,
Section of Wildlife Surveys.

We have your Kenai moose outline, so you need not rewrite that. You may have other problems you would like to start work on, however. Would it not be well to take a look at the Delta River bison herd?

HHTJ

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

Juneau, Alaska

Nov. 21, 1938

Chief of Bureau

Biological Survey

Washington, D. C.

Dear Mr. Gabrielson:

I enclose herewith copy of a proposed wildlife research program for Alaska. A copy has been furnished to Mr. Dufresne for his information.

Very truly yours,

Prin. Biologist

Resolution

To the Honorable Secretary of Agriculture,
Through the Chief of Bureau of Biological Survey:

Whereas, The work of the Alaska Game Commission has reached a stage where it must rely on greater factual findings by research as a basis for action, especially in view of the numerous problems arising as a result of settlement pressure on wild life maintenance,

Whereas, It is felt that in Alaska we are at least ten years behind in such needed research.

Whereas, Many acute problems now face this Commission pertaining to wildlife maintenance as against ~~cultural development~~ cultural development, ~~and greater settlement and consequent pressure on wildlife is an immediate threat~~

Insert

Whereas, Of especial importance are (1) a specialist for major attention to ~~a study~~ the investigation of breeding grounds and their management for the greater production of ducks & geese, (2) a specialist for major attention to ~~maintenance and improvement~~ the study of maintenance & improvement of the annual better than two million dollar (or more) fur production (3) a specialist for major attention to the investigation of big game maintenance and range use problems such as the relationships of livestock raising and bear maintenance on Kodiak Island, maintenance of the unique moose herd on Kenai Pen. in view of ~~pressing settlement formation~~, encroaching settlement, wildlife maintenance elsewhere in view of such threatened settlement pressure as the as an enlarged Matanuska Colony, building of an international highway and proposed colonization at various points.

Whereas, Greater settlement and consequent pressure on wildlife is an immediate threat

Whereas, There is need of anticipating the problems that may arise and be prepared with necessary information to plan in advance, and act promptly as occassion arises to safeguard Alaska's wildlife.

Insert

Now, Therefore, Be it Resolved, That this Commission respectfully urges your support in an increased appropriation for wildlife research in Alaska and assignment of additional personel ~~under the direction of Mr.~~ to assist Mr. Palmer, research biologist of the Biol. Sur. now in charge of ~~Alaska~~ wildlife investigations in Alaska, in order that the needed studies of current and future wildlife problems may be ~~accomplished~~ adequately accomplished.

Juneau, Alaska
Jan. 16, 1939

Chief of Bureau
Biological Survey
Washington, D. C.

Dear Sir:

I enclose herewith a report on wildlife in the interior submitted by Mr. Warwick and copy of a letter to Mr. Warwick concerning his future work.

I appeared before a meeting of the Alaska Game Commission now in session and discussed the accomplishment of research the past year and plans for the future. The Commission is heartily appreciative of our research efforts, want more of the same and approve of the proposed future program. My presentation to the Commission included the following:

Function of Research

"The project to which I am assigned is entitled "Investigations of the Wildlife Resources in Alaska". The purpose is to develop information concerning wildlife problems through scientific or systematic investigations and study for the use of the Alaska Game Commission essentially and such other agencies as are interested in wildlife administration. It is also to develop facts of purely scientific interest as supplemental to and a part of the more practical determinations. Chiefly, however, it is to determine facts by systematic observation and scientific methods in such detail as to give a complete picture of a problem, to properly record and report findings in such form that they may be of practicable understanding

and use by the administration of wildlife, which is chiefly the concern of this Commission.

On the present job I am alone as to technical assistance. Additional men, trained in range and wildlife investigations, are needed. We are limited by appropriations. I have proposed a program and staff for future work.

Accomplishments during the year
(between meetings of Commission)

1. Fairbanks CCC project -

20 miles of fence taken down and wire rolled in 10 rod rolls.

At last meeting it was agreed to retain lower lands of the former experiment station site. This area will be posted as a wildlife refuge, 12 signs having been sent to Warwick for that purpose.

Disposition of wire - suggested 10 mi. to College; 3 mi. earmarked for Nunivak Island; remainder for wildlife agent premises.

2. Nunivak muskoxen and reindeer -

Objective and accomplishment - reference to report.

Status - The situation on Nunivak Island is satisfactory and further investigations will not be required in the immediate future. With Paul Ivanoff on the job to report to us from time to time, we can feel assured that due care and attention will be given as needed. The only question yet to be settled is that of fencing.

3. Kodiak bear, beaver and cattle -

Objective and accomplishment - reference to report.

Status - Action on recomendations - assignment of predatory animal hunters.
It was promised that we would return to Kodiak Island next summer (August and September) for a more thorough study of the beaver vs. cattle range and fish spawning relationships. This is another touchy problem and we should give at least two months to observations. A measure of damage if any and comparison of values should be made with a view toward making recomendations for future action.

Closed season on fur bearers recomended by people.

Game Commission house at Kodiak needs to be finished - all materials are there - employment of a carpenter and a plumber for a month or two required and labor to dig sump and well.

4/ Kenai moose -

Objective and accomplishment - reference to two reports.

Status - Survey of Kenai Peninsula for land use planning is first on list of projects recomended by the Alaska Planning Council.

All observations indicate a calf survival crop of less than 30%. Disproportionate number of cows to bulls and abnormal crop. Messrs. Odale and Nelson (guides) and Andrew Berg report a lot of moose ~~xx~~ calves seen last spring. They state the belief that 95% of the cows observed had calves and many cows were seen with twins. However, our observations this fall failed to show a high calf survival. Local observers continue to believe that the ~~xxx~~ moose calves are being killed off by black bears when they are newly born and still wobbly on their legs. A study, therefore, this spring (May 15 - July 15) is necessary to determine the number of calves born and the losses that probably take place during the first few weeks of life. During observations it is the thought that we should endeavor to kill perhaps a dozen black bears that may be suspected of preying on moose calves and examine their stomach for hooves and hair. Observation and examination of coyotes for suspected kill of moose calves is also suggested.

Future Projects for next year
(F. Y. 1940)

1. Kenai spring calving investigation during May 15 - July ~~x~~ 15 on Tustemena Lake unit in continuation of previous study made on that area. The further study to include:
Reconnaissance and grazing capacity determinations
Kill and examination of bears and coyotes during moose calving.
Determination per cent calves born and losses during first few weeks of life
Examination of vegetation changes due to beaver work
Observation of the habits of moose during calving and of the forage eaten

2. Kodiak bear and beaver vs. cattle grazing and fish spawning investigations during August and September. This is an obligation since it was promised the people of Kodiak last~~x~~ summer. The further study to include:
Reconnaissance of cattle ranges to determine character and quantity of forage being produced
Comparison of undisturbed areas to those changed by the work of beaver for measure of damage to forage or improvements
Observation of the occupation of streams by fish and the effects of changes in the water areas by beaver work
Determination of the spread of beaver and the area actually occupied by them and of the trend in future occupation

3/ Interior buffalo - observations to be made by Warwick during the summer for preliminary information as to the number of animals and their habits on the range and to learn if possible

the extent of the seasonal ranges.
This preliminary investigation to be followed later and as time permits by a detailed forage study and reconnaissance.

Other projects that suggest themselves for future attention

a. Observation of sheep and wolves in the Little Delta region in relation to the buffalo development - a winter study.

b. Reconnaissance of the Goodpaster country to determine its suitability as range for buffalo or elk vs. cattle.

c. Observations of beaver and other fur bearers in the Bristol Bay area vs. fish spawning, reindeer grazing and bird nesting. To follow Mr. Dufresne's visit and preliminary observation as to needs this coming summer.

d. Reconnaissance of the Matanuska Valley range for livestock grazing vs. wildlife occupation.

e. Reconnaissance of the Healy River range for livestock grazing vs. wildlife occupation.

f. Investigation of moose occupation on the Moose Refuge unit via Moose River and Chikaloon River.

g. Investigation of moose occupation in the Katchemak Bay unit via the Caribou Hills and Homer.

h. Further investigation of S.E. Alaska deer and goats to determine their range occupation, habits, forage eaten and losses.

i. Gull and bald eagle investigations to determine the nature and extent of their depredations an other wildlife. (This is a desired study by the Wash. office of the Biol. Sur.).

j/ Investigation of bird nesting grounds - project will probably be handled by Goldman in charge of the Pacific Flyways.

k. Investigation of fur bearers - probaly in conjunction with other projects and work of the Petersburg Exp, Sta.

l. Reindeer vs. Caribou observations - probably in conjunction with other projects.

m. Continuation of tundra quadrat studies.

n. Upland game birds and rabbits - probably in conjunction with other projects.

o. Mink vs. muskrat occupation - to determine which is the more important in such sections where the question has been raised.

p. Examination of areas in 3rd Division to determine suitability for elk and buffalo.

Comments

In all this, concerning projects that should be tackled, I wish to stress the importance of considering them at this time chiefly from a view point of economic values. By economic values I mean not only money returns but also equally as important the aesthetic, recreational and educational values. All our problems have come about due to the pressure of settlement demands on our wildlife occupation. How shall settlement and its cultural development fit with wildlife and to what extent shall each give way to the other. Our aim should be a suitable maintenance of both on a basis of econimic need, that is, the greatest return which is probably a compromise consideration and maintenance of both to varying extent. In some cases wildlife may be the minor consideration, in other the proposed cultural development. We must decide on the basis of factual findings which is the more important and plan accordingly.

It was pointed out to the Commission that the number of projects needing attention could not possibly be handled by one man and that additional personnel was imperative. Accordingly a resolution to the effect that greater appropriation and personnel be provided for Alaska wildlife research was made.

Very truly yours,

Pr. Biologist

Juneau, Alaska

November 15, 1938

A PROPOSED WILDLIFE RESEARCH

PROGRAM FOR ALASKA

- - - -

L. J. Palmer
Principal Biologist

OBJECTIVE

For the purpose of investigating the wildlife occupation, environmental conditions, and the wildlife performances and needs in Alaska, especially as influenced by human settlement, with a view to the most practicable administration for the maintenance of the specie or species of wildlife, for the production of an annual crop to be harvested for the benefit of wildlife maintenance itself, as well as its aid to colonization and settlement.

JUSTIFICATION

In the states having an aggregate area of about three million square miles, the Forest Service operates twelve regional forest and range experiment stations, at a minimum expenditure of at least $100,000 per station, per year. These stations conduct research along three lines--namely: forest growth and utilization; erosion control, and stream flow, and range management. In proportion, each station covers an area of about 250,000 square miles. In Alaska, with an area of approximately 590,000 square miles, or twice that covered by any one station in the states, no experimental station is now maintained.

In Alaska, the timber growth is largely virgin, and the chief problem is one of marketing the produce. There is also a question of disposal of a considerable amount of over-mature and dying trees and possible improvement of stand through thinning and replacement to younger growth. Research in forest influences applies generally, perhaps, in so far as the cover is of continental importance and effects, or locally as it concerns the injury by fires, large scale mining operations, and excessive clearing by settlement. Wildlife and range research, on the other hand, looms large and is a major need. Wildlife problems are an issue throughout the Territory; domestic grazing problems concern particularly the reindeer along the Bering Sea-Arctic coast cattle and sheep raising in the Kodiak Island group, Alaska Peninsula, and possibly a future grazing development in the interior.

The wildlife of Alaska is a major asset, not only locally, but to the states as well. The value of the fur catch alone annually sent to the states is approximately $2,~~000,000~~ 377,280. The value of big game animals for hunting, recreational enjoyment, and observation is incalcuable. Its many unique wildlife features that occur no where else makes it all the more imperative that Alaska be given its share of research attention. Such features, for instance, are the Kenai moose, the Alaska brown bears, the Dall sheep, the Rocky Mouhtain goats, the large herds of caribou, the high quality and variety in production of furs, the muskoxen, the promising development of a large buffalo herd of superior sized animals, and the rich bird life. The Territory, as a whole, is a vast nesting and breeding ground for numerous water fowl, and thus a reservoir for production of ducks, geese, and other game birds annually flying southward to furnish sport to the hunters in the states.

In the settlement and tendency toward exploitation of this wildlife resource, many local problems have developed. The local and national values, especially in looking forward to the future, certainly justify an annual expenditure of $75,000 or possibly $100,000 for research in handling Alaska's wildlife. As compared to expenditures in the states on similar projects, this amount is very modest.

Local problems that require prompt attention include such questions as:

(1) How to maintain the Kenai moose herds in suitable productiveness in view of threatened colonization and settlement.

(2) How to settle the controversial question of conflict between brown bear maintenance, and cattle and sheep raising on the Kodiak Island group, so that both may survive.

(3) How to improve conditions for the maintenance of Southeastern Alaska deer in view of settlement demands and severe winter losses during some years.

(4) How to improve conditions for the maintenance of Dall sheep and the mountain. goat in view of settlement demands, loss from predators, and the question of possible loss from disease and parasites.

(5) How to safeguard against the encroachment on the migratory caribou by the growing reindeer herds and what plans to pursue in seeking to separately maintain these two animals.

(6) How, and to what extent, maintain the Alaska brown and grizzly bears in view of settlement and other range needs.

(7) How to compromise in the maintenance of beaver where there is a question of conflict with fish spawning streams and the use of grazing lands for cattle and sheep production.

(8) How best to develop the muskoxen production in relation to other range use, such as by reindeer or cultural occupation by the Eskimos.

(9) How best develop for use the introduced buffalo herd in the interior and the elk on Afognak Island.

(10) How to improve conditions for the maintenance of a maximum production of waterfowl in view of encroachments by settlement and probable losses from predacious birds and animals.

(11) How to maintain and increase the present production of furs

(12) How to improve the wildlife occupation through artificial plantings on areas that are now under-utilized.

REMARKS

While I was in the Washington office of the Forest Service just prior to transfer to the Biological Survey, and leaving for Alaska, an item for the next year's budget estimates of $100,000 was included for the establishment of a forest and range experimental station in Alaska. What has become of this item I do not know. But that the Forest Service eventually hopes to establish a research station in Alaska is evident. A Biological Survey wildlife experiment station has the greater justification in view of the fact that wildlife presents the major problems in need of investigation. Incidentàly, Dr. Shantz in charge of the division of wildlife research of the Forest Service spent considerable time in Alaska this summer looking things over. I know that Regional Forester Heintzleman is especially keen on having the Forest Service undertake wildlife studies in Alaska.

- - - -

Law enforcement alone is inadequate to maintain Alaska wildlife in conformity with other land uses. Enforcement without consideration of other needs is prone to get into difficulties. While absolutely necessary, it is not the entire answer. Management planning based on a thorough investigation of the individual local problems and of the needs of the wildlife species concerned is essential as a basis for regulation. The term management as applied to wildlife, is abhorent to some, but it is an avenue of scientific approach to the handling of a problem. A lot of people have little love for regulation anyway, and an approach on a management basis is more apt to win popular approval.

There are two kinds of research, one that determines facts of purely scientific interest, and the other that seeks such information as will be of immediate and practicable application to administration. It is with the latter that we are most concerned at this time, in the investigations of the wildlife resources of Alaska. Both lines of research are important, and supplemental to each other, but emphasis

should be placed on studies of a practical nature, because of the pressing need for a prompt solution of local problems. A number of such problems are demanding attention, particularly as arising from the intrusion of settlement and the consequent impingment of cultural development on wildlife areas. Thus, we are faced with the question of proper land use and a need for careful planning. This is becoming more and more important in view of a growing interest in Alaska, and a probable future increase in settlement. Research of a practical nature, therefore, is becoming more and more imperative to enable a best adjustment between wildlife and cultural use, and to prevent an undue encroachment on a continued wildlife maintenance.

A general wildlife survey in Alaska is desirable, including a determination of the forage cover, as well as the location, kind, and relative abundance of animals and birds. In survey of range, it is also desirable to differentiate areas best suited for other purposes, such as grazing of livestock, and farming. Reconnaissance of land where there are pressing local problems should be given first attention.

Proposed Projects and Financial Set-up

In the event consideration is given to the establishment of a Biological Survey wildlife station in Alaska, I propose the following projects and financial set-up.

1. Washington office supervision
   - Salaries and expenses. $8,000.00
   - Miscellaneous. 600.00

2. Headquarters--Juneau or elsewhere as later determined to be best suited.
   Projects--Supervision and problems in general, including forage reconnaissance and wildlife surveys
   Principal Biologist in charge
   - Salary 5,600.00
   - Expenses 3,000.00

Assignment--L. J. Palmer

Clerk and Stenographer
Salary. 2,400.00
Office expenses 500.00

Assignment_____

3. Field headquarters--Juneau
Projects: S. E. Alaska deer and goats
S. E. Alaska brown and grizzly bear
S. E. Alaska fur bearers
Biologist
Salary. 3,200.00
Expenses. 2,500.00

Assignment_____

4. Field headquarters--Anchorage
Projects: Kenai moose and mountain sheep
Kodiak bear, beaver, and grazing problems
Afognak elk
Biologist
Salary. 3,200.00
Expenses. 2,500.00

Assignment_____

5. Field headquarters--Nushagak
Projects: Nunivak muskoxen
Bristol Bay beaver vs. fish
Caribou vs. reindeer
Yukon Delta waterfowl
Biologist
Salary. 3,200.00
Expenses... . . . . 2,500.00

Assignment_____

6. Field headquarters--Fairbanks
Projects: Interior buffalo
Upland game birds and rabbits
Migratory caribou
Interior fur bearers
Interior mountain sheep

Temporary assignment, J. W. Warwick
Salary. 2,400.00
Expenses. 1,000.00

7. Purchase of boat for operation on Skilak Lake, Kenai River, and Tustemena Lake--Kasilof River. 2,200.00

8. Purchase of boat for operation on the Kodiak Island group. 2,200.00

9. Purchase of boat for operation in the Bristol Bay--Nunivak Island--Yukon Delta area 5,000.00

Total estimate $30,000.00

Additional Projects to be Included Later

10. Waterfowl nesting grounds and predators throughout Alaska.
Biologist
Salary. 3,200.00
Expenses. 3,000.00

11. Aleutian Islands and Alaska Peninsula waterfowl, fur bearers, bears, and grazing problems.
Biologist
Salary. 3,200.00
Expenses. 3,000.00

12. Wildlife diseases and parasites in Alaska
Biologist
Salary. 3,200.00
Expenses. 3,000.00

13. Additional Washington office items 2,400.00

14. Increased item for Fairbanks, upon replacement of Warwick by a trained biologist . . 2,000.00
Total additional . . 23,000.00

Grand Total Estimate. . . .$73,000.00

SUGGESTED QUALIFICATIONS FOR
RESEARCH EMPLOYMENT IN ALASKA

In the event an expanded wildlife research program is adopted for Alaska, and a staff of workers organized, the employment qualifications that would be most desirable include:

(1) Biology or forestry training at an accredited school.
(2) Some range management experience and education.
(3) Some knowledge of the science of animal husbandry
(4) A practical turn of mind.
(5) Civil Service rating.
(6) Ability to rough it in the field six or eight months of the year, and willingness to live under frontier conditions.
(7) A cooperative spirit.

In the matter of training for wildlife research, some knowledge in the following subjects is highly desirable: (1) Biology(including Mamalogy and Ornithology), (2) Botany (including General and Scientific), (3) Ecology (plant and animal), (4) Animal Husbandry (including feeding), (5) Range Management, (6) Diseases and Parasites, (7) Meteorology, (8) Soils, (9) Entomology, and (10) Economics.

In wildlife research, the environmental approach is emphasized. Likewise, in range management, the ecological aspects are stressed. Ecology deals with environment, with the growth and development of plant and animal communities. It is highly important in the study of wildlife. However, it is not the entire answer. Equally important is a consideration of the animal itself, its nature, habits, and functioning. Animal husbandry deals with the growth and development of the individual animal. A knowledge of traits and habits is essential. Thus, for instance, some animals are superior rustlers and get along better on a range; or, timidity, as with some fur bearers, may seriously interfere in the handling of a species where there is disturbance; or the migratory habits

of some species whether local or more extensive will require a larger acreage allowance per head for producing the species. Confinement in some instances, may result in heavy parasitism, some animals being more subject to such affliction than others. The attack of nose flies in reindeer is undoubtedly a cause for the characteristic range habit of the reindeer to move against the wind, often travelling as far as 25 miles during the day. Further, the food habits of thespecies is of vital concern and a major phase in wildlife or range management research. To learn the kind and amount of food eaten by the animal or bird is necessary to determine the number that may be produced safely or carried on any particular area.

As to the other features, a knowledge of theclassification of plant, animal, bird, and insect life, is a basic requirement to an understanding of the forms dealt with. Since wildlife is dependent on its environment or surroundings for food, shelter, and movement, some knowledge of the factors that influence the composition of that environment are essential. Such include particularly the climate and soil. Finally, there is the human relationship in which it is desirable to know and understand in a general way at least the economic aspects of the problem of settlement, of national and community interests, and of land use as a whole, in which wild life production is an important part.

Some Economic Aspects of Proposed Projects.

(Concerning those upon which some work has been done by the present investigation.)---

1. Kenai Moose

A major wildlife feature--considered to be the largest of its kind, both as to size of herd and size of animal. Presents an unusual opportunity for the study of a big game animal in its natural environment and the development of methods and principles in its management of probably far reaching effect, not only in maintenance of moose, but also in its application to other similar species of wildlife.

Occupies an area largely non-agricultural, and particularly suitable for wildlife production.

Furnishes an important item of food to local residents, including fishermen that winter in the country, and settlers seeking

homesteads. The cash value of the annual crop of moose between Tustemena and Skilak Lakes is estimated to be at least $50,000.00. (The local population furnishing hunters within convenient take of moose on Kenai Peninsula numbers approximately 3,580).

Furnishes hunting sport particularly to outside trophy seekers who spend thousands of dollars each year for transportation, hotel accommodations, and guide services.

2. Kodiak bear and beaver vs. cattle and sheep raising.

The Kodiak Island group in part possesses an excellent grass range suitable for the development of cattle and sheep raising. Such development has been initiated, but is threatened in the heavy kill of livestock by an increased brown bear population, and in former hay meadows being destroyed by the work of beaver.

There is estimated to be sufficient range on the Kodiak Island group for the annual production of beef valued at approximately $1,500,000.00.

The population of the islands (1930 census) is 1,568 inhabitants; the total area of the islands is 4,861 square miles.

Development of a livestock industry will enable increased settlement and the building of permanent homes.

Fishing comprises the chief industry of the islands. The maintenance of a few cows for milk and for meat is an inducement to the establishment of homes on the islands by those engaged in fishing during the summer months.

The production of beaver (planted on the islands) if properly controlled, is an added asset to the islands, which are otherwise largely lacking in fur. The Kodiak brown bear is world famous as a big game species, annually attracts hunters from all parts of the world, and needs to be maintained because of its unique interest and its value in the money locally expended by big game hunters for guide service, hotel accommodations, and transportation.

Nationally, the interest in the Kodiak bear is so great that the bitter controversies have been waged in newspapers and mag-

azines concerning a supposed threat to its existence by cultural development on the islands. Both beaver and bears have been accused of injuring fish spawning streams, a protest to that effect having been made by the United Fishermen of Alaska.

The Kodiak Island group in all phases of cultural and wildlife use presents one problem as a whole in economic development.

3. Nunivak Muskoxen.

A herd of thirty-one muskoxen planted on Nunivak Island in 1935 and 1936 has increased to 50. An increase to approximately 500 animals is likely eleven years hence, 1,000 animals fourteen years hence, and 3,500 twenty years hence.

Muskoxen formerly abundant in Alaska were exterminated a century ago. The introduction of the present animals was for the purpose of reestablishment as a game animal and to help conserve a species threatened with extinction.

Its future value will lie in its establishment on the Arctic coast as a game animal to be used under suitable regulation as an added means of subsistence for the Eskimos.

4. Interior Buffalo

A herd of 23 buffalo planted on Big Delta river, about 90 miles south of Fairbanks in 1928, has increased to approximately 150 animals. The range occupied has a capacity for at least 1,300 head.

The introduction was for the purpose of supplying the interior of Alaska with an additional big game animal, for utilizing a range otherwise largely lacking in grazing animals, and to build up a large herd of buffalo under natural conditions more readily available in Alaska than found in the States.

It is reported that the animals now being produced are of unusually large size and vigor.

Principal values-- An opportunity of building up a unique wildlife feature; helping to bring the buffalo back into our wildlife picture from its former point of near extinction; a fuller utilization of the range resource, and future revenue values as a big game animal.

5. S. E. Alaska Deer.

The deer in Alaska are confined to the Southeastern portion of the Territory, excepting recent plantings on Kodiak Island and near Cordova in Southern Alaska.

The deer, aside from the brown bears and mountain goats, represent th chief game animal in Southeastern Alaska. It is the most extensively hunted, and many people rely on its take for part of their winter subsistence. Such people include the local Indians, fishermen wintering on the beaches, fox ranchers, nd some towns people.

About one-third of the population of the Territory or approximately 19,304 persons, (1930 census) reside in S. E. Alaska

6. Fur bearers

The Fourteenth Annual Report of The Alaska Game Commission to the Secretary of Agriculture, for the period July 1, 1937 to June 30, 1938 reports as follows:

"Revenues derived from the gathering of furs in Alaska are of such importance as to rank third among the leading industries, being exceeded only by the fisheries and the minerals.

Probably not less than 15,000 natives, women and children included, share in the average annual amount of $2,347,186.74 received from sales of pelts, in addition to which they use large quantities of inferior grades of local furs for garments and bedding.

A fifteen year average of the revenue returns of the various kinds of land fur animals is as follows:

1--Mink	$422,547.49
2--Red Fox	391,683.97
3--Blue Fox	372,912.14
4--Beaver	237,862.56
5--White Fox	237,380.42
6--Muskrat	222,858.55
7--Lynx	134,363.04
8--Cross Fox	84,095.33
9--Marten	83,411.00
10--Silver-Black Fox	68,433.88
11--Land Otter	53,336.60

12--Ermine	13,334.30
13--Wolf	10,313.41
14--Wolverine	5,862.65
15--Coyote	3,623.90
16--Polar Bear	2,416.87
17--Black Bear	2,349.88
18--Hare	155.84
19--Marmot	74.16
20--Squirrel	72.68
	$2,347,186.74

Total of all Kinds

A fur farming experiment station is now maintained at Petersburg by the Office of Experiment Stations. The station was established this year for the purpose of developing suitable practices in fur ranching.

7. Waterfowl

Alaska with a coast line of approximately 26,000 miles and innumerable inland water ways, sloughs, ponds, lakes and swamps is a vast nesting and breeding ground for a great variety of waterfowl, including ducks, geese, swan, crane, shorebords, seabirds and others. It is the summer terminus of two major American continent flyways. It is a reservoir for the production of a great many ducks and geese flying southward in the fall to furnish sport for hunters in the States. As such its value, while it cannot be specifically stated, is certainly very great.

8. Beaver vs. fish

Fishing is the leading industry of Alaska, the production being valued at approximately $50,000,000.00 per annum. Beavers are one of Alaska's most important fur animals. During the past fifteen years it has been harvested at the rate of about 15,000 pelts per year and has furnished an average income of $237,862.58 to trappers.

Injuries to fish spawning streams by beavers have been reported. On the other hand, some expression has been made that beaver may improve streams for spawning, especially for red salmon which is one of the most important species.

9. Caribou vs. reindeer

The caribou is the most important game animal in Alaska, its numbers having often been estimated at over a million. The reindeer herds on the Bering Sea-Arctic coast were estimated as numbering better than one million animals in 1936. The caribou occur in interior Alaska, on the Alaska Peninsula, and along the Arctic slope, meeting the reindeer herds as they wander inland from the coast possibly for a distance of

sixty or more miles.

To the interior native, prospectors and settlers, the caribou is often a major means of subsistence. It is in many cases a principal factor that enables penetration of interior Alaska, by settlement. On the other hand, the destruction of caribou on the coast-range induced the introduction of reindeer.

The reindeer development is a promising but as must be admitted at the present time a dubious recourse because perhaps a lack of full appreciation of the economic implications. It seemed to assure the Eskimos of a certain subsistence in view of an evident game depletion.

The meeting of reindeer and caribou presents the question of relative importance and the needs of segregating these two animals as determined by the economic values involved.

L. J. Palmer
Principal Biologist

L. J. Palmer

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
WASHINGTON, D. C.

Inventory Survey by unit of sections to determine the forage cover & wildlife occupation throughout Alaska

March 6, 1939.

MEMORANDUM FOR RESEARCH PERSONNEL

Your attention is called to the attached memorandum from Dr. W. B. Bell, dated March 3, relative to submitting a program of work for 1940, which is self-explanatory. Please note especially the contents of the second paragraph.

In order that this office may be able to submit a complete report on the contemplated activities of all our research personnel to the Division Office on or before April 15, it is requested that your report reach us not later than April 1.

H. H. T. Jackson.

H. H. T. Jackson, In Charge,
Section of Wildlife Surveys.

P. S. It is, of course, understood that you will submit the program of work for J. W. Warwick with yours.

COPY

March 3, 1939.

MEMORANDUM FOR SECTION HEADS

Subject: Program of Work for 1940

We now have our general program of research activities in good shape. Our next important undertaking should be that of formulating more specifically the individual work programs assigned to members of the research personnel. An up-to-date conception of wildlife research includes not only assembling reliable information but also its analysis to determine the meaning of the facts and rounding out the entire undertaking by thinking the problems through to the formulation of well-considered recommendations and application of the results of the studies to policies of wildlife management and administration. The present dynamic interest in wildlife and its proper management emphasizes the need that the Biological Survey be in a position through its research to furnish convincing facts and to give sound counsel to those who are concerned with wildlife restoration and with building up and maintaining a satisfying wildlife population for the entire nation. The need is apparent for definite outlining of all of our current investigations to insure clearness of thinking, proper coordination, and that no important gaps are left that we should close up in our attack on wildlife problems.

With this in view, please canvass all individual work programs of the Section and through consultation or correspondence with the individual employees prepare and submit a working program covering each important line of work assigned. Consideration should be given to discontinuing lines of work that have not proven productive and to inaugurating new and promising projects. These work programs should be outlined, giving first an appropriate name to the undertaking, a brief statement of the objective sought, the methods employed in the investigation, and, in event work is now proceeding on the project, a brief statement of results accomplished to date with pertinent recommendations. A brief statement of recommendations that would facilitate the successful prosecution of the investigation may also be included. Where projects are now under way, the work outlined should be based on allotment of essentially the same amount of money as at present.

Please proceed with the consideration of projects and the preparation of outlines so that the material submitted by the various employees may be carefully reviewed and be in final shape for submission to the Division Office not later than April 15, 1939.

(Sg.) W. B. Bell
Chief, Wildlife Research.

Juneau, Alaska
March 24, 1939

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Mr. Gabrielson:

Reference is made to Dr. Jackson's letter of March 6 concerning the program of research work for 1940.

I refer you to my previous correspondence of December 6, January 23, and March 7 and enclose herewith, as instructed, my report in suggested form on proposed projects for 1940.

Very truly yours,

L. J. PALMER
Principal Biologist

Encls.

LJP:VP

June 6, 1938

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Mr. Gabrielson:

Reference is made to Mr. Jackson's memorandum of May 3rd.

I have just returned to Juneau following a two months study of the moose on Kenai Peninsula. Delay in replying to Mr. Jackson's memorandum is occasioned by my late return from the field.

During the past year I have worked on two projects, namely, the Southeastern Alaska deer situation and the Kenai moose management problem. Both were preliminary surveys, looking to more comprehensive and continued study in the future. One month was spent in the field investigating deer in Southeastern Alaska. This was largely in the form of a survey of the situation, and more detailed observations must follow. Progress reports on this investigation were submitted. The study of the Kenai moose has been outlined. Two months of field work have just been completed. A report has been written and is now being typed in final form.

For the next year our efforts will be confined largely to three major projects; namely,

1. Investigation of the muskoxen and carideer situation on Nunivak Island;

2. Investigation of the cattle raising-fish spawning-brown bear controversy on Kodiak Island; and

3. Continued investigation of the Kenai moose problem.

Your office has already been advised of the muskoxen situation on Nunivak Island. Complaints are being made by

the native inhabitants of destruction and terrorizing of camps and villages by the muskoxens. The Bureau of Indian Affairs requests that some action be taken. Furthermore, the CCC is to build corrals for us on the island and Mr. Burdick, who is in charge of the CCC for Alaska, desires my presence on the island in July to supervise initial construction, or at least to indicate site and form of construction.

Protests have been coming in now for several years from Kodiak Island that brown bears are killing off the cattle and interferring with the spawning of fish in the streams. Beavers are also accused of interferring with fish spawning. Complaints have been especially strong the past year. Accordingly, the Alaska Game Commission has promised initial investigation this summer, and I am "elected for the job."

The Kenai moose project is a continuation of the studies begun this year, particularly with a view to observations of rutting in the fall.

A fourth project, in which we are acting merely in an advisory capacity, is the removal of fencing and two shelter barns from the former station site at Fairbanks. This work is to be done by CCC labor, and will probably be started this month.

The three major projects outlined herein all require full attention, but without assisting personnel it will be impossible for me to do other than preliminary work on each. I shall have to divide my time between them as best I can, but it is going to "keep me hopping" to do so. I need at least three permanently assigned technical assistants -- one for the Kodiak job, one for Kenai, and one for Nunivak, the Southeastern Alaska deer problem, and such other projects as develop. My task should be general supervision, with time enough to get around and observe the wildlife situation in Alaska as a whole. Several full seasons of work will be needed for each major project. I can't do it alone. As it is, I am so tied down now that I cannot afford to break away for trips with others such as Mr. Heintzleman and Dr. Shantz, who have so requested. There are other people I should be getting around with, but being alone and with the pressure of immediate projects I am decidedly handicapped.

Very truly yours,

L. J. Palmer
Principal Biologist

LJP/VC

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY
WASHINGTON, D.C.

ADDRESS REPLY TO
CHIEF, BUREAU OF BIOLOGICAL SURVEY
AND REFER TO

S

March 28, 1939.

Mr. Lawrence J. Palmer,
c/o Alaska Game Commission,
Juneau, Alaska.

Dear Mr. Palmer:

I have your letter of March 7, written in reply to my request for a program of work for 1940. This memorandum was sent out along with all the others since I thought that you might possibly have some changes you wish incorporated after writing me previously. We have your other letters and, of course, know in general what your plans are for 1940, and shall draft a program for you accordingly.

I note your suggestion in regard to moving your headquarters from Juneau to Anchorage. Such a move would appear to be very desirable since it would place you nearer to most of your field work and would give you all the facilities and more than you have at Juneau with the possible exception of direct contact with the Alaska Game Commission. Such contact, however, would be possible from Anchorage. I am, therefore, leaving it entirely up to you as to when we make the transfer since change of station will, of course, require authorization through our Administrative Division. It will require also a statement of reasons for the change and the advantages to the Bureau. These reasons I think I can amply supply myself but I should like word from you as to the exact date you wish the transfer to take effect. It is my understanding that the new Federal Building is either in the process of construction at Anchorage or is soon to be built. This being the case, would it not be possible for you to procure office space in that building? This would be a matter well worth your looking into.

With kindest regards and all good wishes, I am,

Sincerely,

H. H. T. Jackson

H. H. T. Jackson, In Charge,
Section of Wildlife Surveys.

P.S. You have our approval to go ahead with your plans as listed in your letter. Travel instructions will not be needed.
We have misplaced your letter of December 6, and if you have an additional carbon available, we would appreciate having it.

Juneau, Alaska
April 14, 1939

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Mr. Gabrielson:

Reference is made to Dr. Jackson's "S" file of March 28.

I enclose copy of my letter of December 6, as requested. You should now be in receipt of my project sheets for 1940, in reply to your recent request. My letter of March 7 was written prior to receiving that request.

While Mr. Hendrickson, of the Alaska Game Commission, was in Washington the fore part of the winter, he discussed with Dr. Bell, at my request, the matter of securing office space in the new Federal Building at Anchorage. This, I presume, will have to be taken up with the Post Office Department at Washington. Anticipating future needs, we should require at least three office rooms.

I have definitely in mind a transfer of headquarters to Anchorage. I am not yet sure just when this should take place, but very likely about June or July first of next year, i.e., a little over a year hence. This year I shall probably be in the field about eight months. Upon my return to Juneau after the first of the year, I shall ask for accumulated annual leave (possibly during February or March through April) to make a trip Outside. In the course of my travels I plan to pass through Washington for a few days visit.

However, in due course as plans develop, I shall let you know more definitely as to date of transfer of headquarters and when I will want leave. In making transfer I have in mind the

possibility of utilizing the facilities of the "Brown Bear" on its annual cruise to the Westward (which is usually about July first) for the transportation of household goods and office supplies from Juneau to Seward.

I enclose my schedule of travel for the summer and where mail or telegrams may reach me.

Very truly yours,

L. J. PALMER
Principal Biologist

Encls.

LJP:CF

Palmer Schedule For The Summer

Leave Juneau April 29 for Anchorage
Mail to Anchorage, c/o Jack O'Connor
Alaska Game Commission

Leave Anchorage May 14 for Tustumena Lake
Mail to Anchorage, c/o Jack O'Connor
Alaska Game Commission

Return to Anchorage about July 20
Mail to Anchorage, c/o Jack O'Connor
Alaska Game Commission

Leave Anchorage about July 21 for Kodiak
Mail to Kodiak, c/o Col. Madsen

Leave Kodiak about September 1 for Fairbanks
Mail to Fairbanks, c/o Jack Warwick
until further notice

Juneau, Alaska
April 14, 1939

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Mr. Gabrielson:

Reference is made to Dr. Jackson's "S" file of March 28.

I enclose copy of my letter of December 6, as requested. You should now be in receipt of my project sheets for 1940, in reply to your recent request. My letter of March 7 was written prior to receiving that request.

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I enclose my schedule of travel for the summer and where mail or telegrams may reach me.

Very truly yours,

L. J. PALMER
Principal Biologist

Encls.

LJP:CF

Copy

3 copies

Juneau, Alaska
December 6, 1938

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Sir:

This is to discuss the Alaska job, now that I have been on it for about a year. There is a lot to be done, as you know, and alone I can accomplish only a limited amount. I am willing to do that but would prefer a more thorough investigation of individual problems which can only be done by having the necessary help, as I have previously indicated.

Warwick has been of general assistance in getting under way but, for a number of reasons, his future value becomes a question. In the first place, he lacks education and training. His place at the former experiment station at College was to take care of livestock and to help on field trips as dog musher and camp attendant. The past year he has acted as camp attendant on field trips and as a field guide. His services, in this respect, are no longer desirable, for two reasons: (1) age, and, (2) camp and guide service can best be obtained locally and is preferable. Warwick is over 60 years of age and, consequently, not as spry as he used to be. He can no longer keep up in hiking, is having trouble with his eyes, and has complained at times of dizziness in the morning. This is not so good. Rather than being a helpful camp attendant and companion, he is now apt to become a liability. I do not intend to take him with me on further trips.

Now the question is, what to do about Warwick. I don't want to see him lose a job at his age. He does not come under retirement provisions. He has nothing ahead. But the fact remains that he does not fit into the present job. I am wondering if he could not be transferred to the States and employed as a caretaker at some refuge, to assist in looking after animals. I hope this may be given consideration.

In the meantime, I propose to leave Warwick at Fairbanks this winter to keep an eye on the former station prop-

erty and to keep us advised as to interior wildlife conditions. Next summer (July, August, September and October) I have in mind to detail him to a general observation of the buffalo herd, particularly with a view of determining numbers and the range being occupied at the various seasons.

My own job next summer looks like Kenai again and Kodiak Island. However, the Game Commission meeting is in January, when the further research needs will be discussed. My play, thus far, has been to do those things that the Commission desired. However, there are broader phases which I am not going to be able to get at as long as I am tied down to the investigation of local problems. If I had a couple of good technical assistants to turn loose on individual problems, I should have better opportunity to tackle the Alaska wildlife problem as a whole.

What I have in mind is to secure a broader picture of the wildlife situation through extensive surveys or range and the wildlife occupation. There are certain areas that need to be investigated first, due to present or pending settlement pressure. Such include:

1. The Matanuska Valley region, site of the colonization project;
2. The Gulkana-Copper Center region where the proposed International Highway may possibly enter Alaska;
3. The upper Tanana River as an important wildlife area that might also feel the effects of increased settlement should a highway be established;
4. The Little Delta River range (important as a mountain sheep and wolf area) in its relation to the buffalo development;
5. The Beaver Creek country north of Fairbanks as a possible general wildlife and wilderness area;
6. The Yukon Flats as a bird nesting area;
7. The Healy River country as a possible future grazing range for sheep, cattle and horses in its relationship to the wildlife occupation;
8. Lake Minchumina region as of major importance for moose, caribou and fur-bearers in relation to possible encroachments by reindeer;
9. The Bristol Bay region as an important beaver area and its relationship to fishing and to reindeer;
10. The upper Koyukuk region in an evaluation of its wildlife importance generally;

11. The Goodpaster River area as a suitable range for buffalo or possibly elk;
12. Etc.

A comprehensive survey, by all interested land use agencies, of Kenai Peninsula has already been proposed as a first project by the Alaska Resources Committee of the Regional Land Planning Council. We will be expected to participate in examination of the lands suitable for wildlife, a major use.

Another possibility that we should keep in mind for the future, and thus be sizing it up, is the need for and establishment of a branch field station for the study of game animals under fence, somewhat as we studied reindeer at the former College station. At this time I do not know that we want such a station, since there is so much extensive field work to be done. However, it should not be ignored and some thought should be given to the best location and establishment, just in case.

My thought here is that, aside from its value as one means of research, a permanent station available to tourists will help to advertise the wildlife problem in Alaska to visitors from the States. Such visitors are often influential citizens that can help in promoting a program.

My travel allotment for the fiscal year 1939 is $3,000.00. Of this amount my expenditures thus far, covering the three projects: Nunivak Island, Kodiak Island and Kenai Peninsula, is as follows:

1.	Juneau to Nunivak Island and return to Seward	$ 971.32
2.	Seward to Kodiak Island and return to Seward	440.35
3.	Seward to Kenai Moose range and return to Juneau	533.67
	Total	$ 1945.34

On this expenditure we accomplished three objectives and three reports have been submitted covering (1) the Nunivak Island muskoxen situation (2) the Kodiak Island bear vs. cattle problem (3) a further study of the Kenai moose. My remaining allotment of $1,000.00 will be used for some stenographic employment during the winter and for another trip to Kenai during May and June for

observation of moose calving, if this meets with your approval.

In my Nunivak report I recommended fencing native villages and fish camps against the intrusion of muskoxen. This has been discussed with Mr. Dufresne and Mr. Heintzleman and with Mr. Burdick, who is in charge of CCC work in the Territory. Mr. Burdick has agreed to get out 1,300 posts of red cedar at his Ketchikan camp. These will be shipped free of cost to Nunivak Island by one of the Bureau of Indian Affairs boats, probably the "North Star". Our problem now is to get the necessary fence wire hauled from Fairbanks to Nunivak. Mr. Burdick is making inquiry as to the cheapest haul from Fairbanks to the coast, such as, over the highway by truck to Valdez. Possibly the CCC can handle this also, but Mr. Burdick is not yet sure. If we can get the wire to Valdez, it is likely that the Bureau of Indian Affairs can be induced to haul the fencing, also without charge, to Nunivak via the "North Star". At any rate, we will know shortly what can be done. Should it be necessary to pay for the hauling of wire from Fairbanks to Valdez, would it be possible for the Biological Survey to procure the needed funds?

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For the fiscal year 1940, if the funds become available, the needs for project 66 is as follows:

Travel allotment Palmer and Warwick	$3,000.00
Contribution for clerk and stenographer in the office of the Game Commission	500.00

Salary of Paul Ivanoff on Nunivak Island as per my report	$ 300.00
Hauling fence wire Fairbanks to Valdez in case CCC cannot handle (to be determined)	------

With regards to the item of clerk and stenographer in the office of the Game Commission, this is with the thought that we should contribute a fair share in such service now being furnished us by that office. Our accounts are being handled by Mr. Hendrickson's office and, from time to time, as needed, I receive stenographic assistance in typing reports and correspondence.

Very truly yours,

L. J. PALMER
Principal Biologist

LJP:GF

Juneau, Alaska
Mar. 7, 1939

Chief of Bureau
Biological Survey
Washington, D. C.

Dear Sir:

I have previously written you on accomplishments during the year and indicated the program for 1940. Reference is made to my letters of Dec. 6 and Jan. 23. I now definitely request authorization for the following travel:

(1) Leaving Juneau the latter part of April to spend from May 15 to July 15 on Tustemena Lake (Kenai Peninsula) in study of moose calving.

(2) After July 15 proceed to Kodiak Island to spend August and September in study of the beaver vs. cattle occupation.

(3) Return to Seward the first of October and go into the interior for such study of buffalo or other range as funds will permit and possibly a trip into the Little Delta region for observations of sheep and wolves.

(4) Consider the adviseability of moving research headquarters to Anchorage and if thought desireable and approved by you move quarters from Juneau to Anchorage sometime during the winter. I have very much in mind that Juneau is not a logical center for research headquarters and that a change should be made. However, I do not wish to make a change until I am better prepared to present a justification and feel assured that there will be no question on your part.

If the above is approved I shall leave Juneau about April 29; be in Anchorage about a week (May 5 - 13) accomplishing bids, etc., and arrive at Tustemena Lake May 14 or 15. While at Tustemena Lake May 15 to July 15 I will be out of communication. I shall return to Anchorage shortly after the middle of July, then proceed to Kodiak Island.

Very truly yours,
Prin. Biologist

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

Juneau, Alaska
Dec. 15, 1938

Chief of Bureau
Biological Survey
Washington, D.C.

Dear Sir:

Reference is made to Dr. Bell's letter of December 2 and my recent letter of December 6.

I wired you that I would not be able this fiscal year to contribute toward hire of an additional clerk in Mr. Hendrickson's office. However, if sufficient funds become available next fiscal year I believe we should contribute $500 toward maintenance of a clerk in Juneau in the handling of our accounts. Getting space in the new Post Office to be built at Anchorage and our possibly moving to that point would not affect the proposed contribution for a clerk at Juneau. Where-ever we might locate our accounts would still be handled through Mr. Hendrickson's office, with the probability as our work expands for increased service demand on that office.

My purpose in requesting space at Anchorage was with the view of eventually establishing at least a branch office at that point and possibly our main office. The building will probably not be ready for occupancy for a year or two. In the meantime as work progresses I'll be in a better position to judge whether a move should be made or not and will advise you accordingly. Should a change of office be made from Juneau to Anchorage, the additional expense entailed would be possibly not over $150 or $200 for packing and shipment of household goods and office supplies plus cost of furnishing offices. The shipment cost might be greatly reduced if some Game Commission boat going westward could haul the furniture and materials from Juneau to Seward. The office equipment that I now have at the Juneau

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF BIOLOGICAL SURVEY

office was [illegible] held in stock. The needs at Anchorage or eventually here if we remain would be desk, table, chairs, book case and files. The furniture from the former station at Fairbanks was transferred to the Game Commission before I arrived in Alaska and will be shipped to Valdez and elsewhere for the use of wildlife agents. Perhaps Mr. Dufresne my be induced to let me have some of it back.

At any rate, we need not be concerned about a possible change in headquarters for the next year or two; however, it is important to get our bid in at this time for space with a possibility that we will move but in any event figuring on the eventual use of the Anchorage location as a field or branch office.

Most of the future wildlife investigations will be to the westward and in the interior. Juneau is not central to the main area of Alaska and far removed from the chief wildlife problem areas. Consequently, it would appear that we might wish to locate our main headquarters at a more central point such as at Anchorage. The only advantage to being in Juneau is our handy contact with the Game Commission office.

I remarked to Mr. Dufresne that it might be desireable in the next year or two to move our headquarters to a more central point, such as Anchorage and he agreed that it might be the thing to do since most of our problems lie to the westward.

Very truly yours,

L.J.Palmer
Prin. Biologist

Juneau, Alaska
December 6, 1938

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Sir:

This is to discuss the Alaska job, now that I have been on it for about a year. There is a lot to be done, as you know, and alone I can accomplish only a limited amount. I am willing to do that but would prefer a more thorough investigation of individual problems which can only be done by having the necessary help, as I have previously indicated.

Warwick has been of general assistance in getting under way but, for a number of reasons, his future value becomes a question. In the first place, he lacks education and training. His place at the former experiment station at College was to take care of livestock and to help on field trips as dog musher and camp attendant. The past year he has acted as camp attendant on field trips and as a field guide. His services, in this respect, are no longer desirable, for two reasons: (1) age, and, (2) camp and guide service can best be obtained locally and is preferable. Warwick is over 60 years of age and, consequently, not as spry as he used to be. He can no longer keep up in hiking, is having trouble with his eyes, and has complained at times of dizziness in the morning. This is not so good. Rather than being a helpful camp attendant and companion, he is now apt to become a liability. I do not intend to take him with me on further trips.

Now the question is, what to do about Warwick. I don't want to see him lose a job at his age. He does not come under retirement provisions. He has nothing ahead. But the fact remains that he does not fit into the present job. I am wondering if he could not be transferred to the States and employed as a caretaker at some refuge, to assist in looking after animals. I hope this may be given consideration.

In the meantime, I propose to leave Warwick at Fairbanks this winter to keep an eye on the former station prop-

erty and to keep us advised as to interior wildlife conditions. Next summer (July, August, September and October) I have in mind to detail him to a general observation of the buffalo herd, particularly with a view of determining numbers and the range being occupied at the various seasons.

My own job next summer looks like Kenai again and Kodiak Island. However, the Game Commission meeting is in January, when the further research needs will be discussed. My play, thus far, has been to do those things that the Commission desired. However, there are broader phases which I am not going to be able to get at as long as I am tied down to the investigation of local problems. If I had a couple of good technical assistants to turn loose on individual problems, I should have better opportunity to tackle the Alaska wildlife problem as a whole.

What I have in mind is to secure a broader picture of the wildlife situation through extensive surveys or range and the wildlife occupation. There are certain areas that need to be investigated first, due to present or pending settlement pressure. Such include:

1. The Matanuska Valley region, site of the colonization project;
2. The Gulkana-Copper Center region where the proposed International Highway may possibly enter Alaska;
3. The upper Tanana River as an important wildlife area that might also feel the effects of increased settlement should a highway be established;
4. The Little Delta River range (important as a mountain sheep and wolf area) in its relation to the buffalo development;
5. The Beaver Creek country north of Fairbanks as a possible general wildlife and wilderness area;
6. The Yukon Flats as a bird nesting area;
7. The Healy River country as a possible future grazing range for sheep, cattle and horses in its relationship to the wildlife occupation;
8. Lake Minchumina region as of major importance for moose, caribou and fur-bearers in relation to possible encroachments by reindeer;
9. The Bristol Bay region as an important beaver area and its relationship to fishing and to reindeer;
10. The upper Koyukuk region in an evaluation of its wildlife importance generally;

11. The Goodpaster River area as a suitable range for buffalo or possibly elk; cattle
12. Etc.

A comprehensive survey, by all interested land use agencies, of Kenai Peninsula has already been proposed as a first project by the Alaska Resources Committee of the Regional Land Planning Council. We will be expected to participate in examination of the lands suitable for wildlife, a major use.

Another possibility that we should keep in mind for the future, and thus be sizint it up, is the need for and establishment of a branch field station for the study of game animals under fence, somewhat as we studied reindeer at the former College station. At this time I do not know that we want such a station, since there is so much extensive field work to be done. However, it should not be iguored and some thought should be given to the best location and establishment, just in case.

My thought here is that, aside from its value as one means of research, a permanent station available to tourists will help to advertise the wildlife problem in Alaska to visitors from the States. Such visitors are often influential citizens that can help in promoting a program.

My travel allotment for the fiscal year 1939 is $3,000.00. Of this amount my expenditures thus far, covering the three projects: Nunivak Island, Kodiak Island and Kenai Peninsula, is as follows:

1. Juneau to Nunivak Island and return to Seward	$ 971.32
2. Seward to Kodiak Island and return to Seward	440.35
3. Seward to Kenai Moose range and return to Juneau	533.67
Total	$ 1945.34

On this expenditure we accomplished three objectives and three reports have been submitted covering (1) the Nunivak Island muskoxen situation (2) the Kodiak Island bear vs. cattle problem (3) a further study of the Kenai moose. My remaining allotment of $1,000.00 will be used for some stenographic employment during the winter and for another trip to Kenai during May and June for

observation of moose calving, if this meets with your approval.

In my Nunivak report I recommended fencing native villages and fish camps against the intrusion of muskoxen. This has been discussed with Mr. Dufresne and Mr. Heintzleman and with Mr. Burdick, who is in charge of CCC work in the Territory. Mr. Burdick has agreed to get out 1,300 posts of red cedar at his Ketchikan camp. These will be shipped free of cost to Nunivak Island by one of the Bureau of Indian Affairs boats, probably the "North Star". Our problem now is to get the necessary fence wire hauled from Fairbanks to Nunivak. Mr. Burdick is making inquiry as to the cheapest haul from Fairbanks to the coast, such as, over the highway be truck to Valdez. Possibly the CCC can handle this also, but Mr. Burdick is not yet sure. If we can get the wire to Valdez, it is likely that the Bureau of Indian Affairs can be induced to haul the fencing, also without charge, to Nunivak via the "North Star". At any rate, we will know shortly what can be done. Should it be necessary to pay for the hauling of wire from Fairbanks to Valdez, would it be possible for the Biological Survey to procure the needed funds?

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Chief - 5 December 6, 1938

Salary of Paul Ivanoff on Nunivak Island as per my report	$ 300.00
Hauling fence wire Fairbanks to Valdez in case CCC cannot handle (to be determined)	------

With regards to the item of clerk and stenographer in the office of the Game Commission, this is with the thought that we should contribute a fair share in such service now being furnished us by that office. Our accounts are being handled by Mr. Hendrickson's office, and, from time to time, as needed, I receive stenographic assistance in typing reports and correspondence.

Very truly yours,

L. J. PALMER
Principal Biologist

LJP:GF

A Forest and Range Experiment Station for Alaska is authorized by the McSweeney-McNary Act of May 22, 1928 (45 Stat. 699; Sec. 581a, Title 16, U. S. Code).

Alaska has a gross area of 586,000 square miles and is thus one-fifth the size of continental United States. Conservative estimates show that as much as 470,000 square miles, or roughly, 300 million acres, supports forest, grass and tundra vegetation of present and prospective economic importance. This acreage is almost half that of the western range area of continental United States. It is the largest area remaining in the possession of the United States of wildlife importance and natural conditions offering unusual possibilities for future recreational and other developments. The south coast has 6 million acres of heavy spruce and hemlock forest capable under proper forestry treatment of supplying the Nation with 1,000,000 tons of newsprint per year in perpetuity, but still awaiting development. The vast interior region contains not less than 40 million acres of dense forest of small trees that can contribute materially to the home-making needs of a large future local population. Open woodland and grass lands aggregating at least 154 million acres are available throughout the Territory to support unequaled herds of big game animals for the enjoyment of the Nation's sportsmen as well as to maintain domestic livestock enterprises; 100 million acres of tundra vegetation in the extreme north and west can provide the basis for an expanded and stabilized reindeer industry that will improve the lot of the local Eskimo population. A great variety of important fur-bearers occur throughout the Territory, furnishing an annual take of pelts valued at millions of dollars. Key nesting areas for migratory waterfowl are found on such major areas as

the Yukon Delta, Upper Yukon Flats, Arctic tundra and on numerous islands which help greatly to maintain the present supply which furnishes sport to the people of continental United States.

It is estimated that the present reindeer herds number over one million animals. Three major caribou herds number at least two million animals. Other big game animals, such as, moose, bear, mountain sheep and goats and deer aggregate fully another one million animals.

The social and economic welfare of the Territory is in large measure bound up with the manner in which this vast empire of timber and range land is to be used and the extent to which it is to be protected from fire. Planned programs of study should be started to determine the basic information needed for growing of timber as a crop, such as rate of growth, insect and disease control, method of harvesting and methods of natural reproduction under varying conditions; for maintaining and improving the character and volume of forage crops on the range lands and increasing the numbers of the more desirable game animals and fur-bearers; for developing suitable management of reindeer, cattle and sheep grazing; for controlling the very destructive forest, grass and timber fires that now occur in interior and northern Alaska.

For further information there is attached a copy of Separate No. 17 from Senate Document 199, "The Western Range A Great But Neglected Natural Resource," and copy of a short memorandum dated February 6, from L. J. Palmer to Mr. Heintzleman outlining some projects he thought desirable in a program for a Forest and Range Experiment Station in Alaska.

Summary of Budgetary Requests

1- Wolf Control	$143,000.00
2- Enforcement	179,600.00
3- Aleutian Survey	45,000.00
4- Big Game & Duck Hunting Guides	50,000.00
5- Bear Depredations, Kodiak	20,000.00
6- Transplanting	40,000.00
7- Muskrat Beaver Survey	15,000.00
8- Kenai Moose	20,000.00
9- Bird Banding	20,000.00
10- Rabbit, grouse Expenditures	25,000.00
Total	$557,600.00

October 8, 1937

BFH

Chief
Bureau of Biological Survey
Washington, D. C.

AIRMAIL

Dear Mr. Gabrielson:

In conformity with your wires of September 30th and October 2nd, we are submitting herewith the attached list of projects, in priority order, for inclusion in the Alaska plan of the National Resources Committees. The list represents our ideas of the outstanding needs of the Territory and was compiled after consultation with other Department of Agriculture heads in Alaska.

Too much stress cannot be laid on the importance of securing two Government-owned airplanes for use by the Alaska Game Commission in enforcement and reconnaissance work, as pointed out several times before. Commercial aviation has progressed so far in the Territory that our dog teams, river boats, and salt water launches are well nigh obsoleted. We must keep pace with other travel, and this means the ownership and use of our own airplanes.

Under his Project No. 4 Regional Forester Heintzleman has asked for a forest and range experiment station to gather basic information to properly use and perpetuate timber and range resources. This project certainly has our unqualified endorsement.

Due to the paucity of material received by this office, it is not entirely clear just what information is required in this preliminary report. The airmailed letter spoken of in your wire of September 30th did not arrive here until October 7th; therefore, the projects listed herewith were compiled in less than twenty-four hours in order to catch the only southbound steamer for several days.

Very truly yours,

FRANK DUFRESNE
Executive Officer

FD/VB
Encls.
cc-Mr. Heintzleman

June 6, 1938

Chief
Bureau of Biological Survey
Washington, D. C.

Dear Mr. Gabrielson:

Reference is made to Mr. Jackson's memorandum of May 3rd.

I have just returned to Juneau following a two months study of the moose on Kenai Peninsula. Delay in replying to Mr. Jackson's memorandum is occasioned by my late return from the field.

During the past year I have worked on two projects, namely, the Southeastern Alaska deer situation and the Kenai moose management problem. Both were preliminary surveys, looking to more comprehensive and continued study in the future. One month was spent in the field investigating deer in Southeastern Alaska. This was largely in the form of a survey of the situation, and more detailed observations must follow. Progress reports on this investigation were submitted. The study of the Kenai moose has been outlined. Two months of field work have just been completed. A report has been written and is now being typed in final form.

For the next year our efforts will be confined largely to three major projects; namely,

1. Investigation of the muskoxen and carideer situation on Nunivak Island;

2. Investigation of the cattle raising-fish spawning-brown bear controversy on Kodiak Island; and

3. Continued investigation of the Kenai moose problem.

Your office has already been advised of the muskoxen situation on Nunivak Island. Complaints are being made by

the native inhabitants of destruction and terrorizing of camps and villages by the muskoxens. The Bureau of Indian Affairs requests that some action be taken. Furthermore, the CCC is to build corrals for us on the island and Mr. Burdick, who is in charge of the CCC for Alaska, desires my presence on the island in July to supervise initial construction, or at least to indicate site and form of construction.

Protests have been coming in now for several years from Kodiak Island that brown bears are killing off the cattle and interferring with the spawning of fish in the streams. Beavers are also accused of interferring with fish spawning. Complaints have been especially strong the past year. Accordingly, the Alaska Game Commission has promised initial investigation this summer, and I am "elected for the job."

The Kenai moose project is a continuation of the studies begun this year, particularly with a view to observations of rutting in the fall.

A fourth project, in which we are acting merely in an advisory capacity, is the removal of fencing and two shelter barns from the former station site at Fairbanks. This work is to be done by CCC labor, and will probably be started this month.

The three major projects outlined herein all require full attention, but without assisting personnel it will be impossible for me to do other than preliminary work on each. I shall have to divide my time between them as best I can, but it is going to "keep me hopping" to do so. I need at least three permanently assigned technical assistants -- one for the Kodiak job, one for Kenai, and one for Nunivak, the Southeastern Alaska deer problem, and such other projects as develop. My task should be general supervision, with time enough to get around and observe the wildlife situation in Alaska as a whole. Several full seasons of work will be needed for each major project. I can't do it alone. As it is, I am so tied down now that I cannot afford to break away for trips with others such as Mr. Heintzleman and Dr. Shantz, who have so requested. There are other people I should be getting around with, but being alone and with the pressure of immediate projects I am decidedly handicapped.

Very truly yours,

L. J. Palmer
Principal Biologist

LJP/VC

February 6, 1937

MEMORANDUM FOR MR. HEINTZLEMAN

ALASKA FOREST AND RANGE EXPERIMENT STATION
(Suggestions as to Program)
(In cooperation Forest Service and Biological Survey)

NOTES

Headquarters at Juneau or Anchorage
Branch stations for field observations at Kenai Pe., Palmer, Fairbanks, Nome and Alaska Pe.

Projects

(1) Forest and Range Inventory
Topographic map--air photography
Cover survey--timber and forage
Survey of lands suitable for cultivation

(2) Fire prevention and control in interior

(3) Grazing investigations
Reindeer--Bering Sea--Arctic Coast
Restoration of depleted range
Management methods
Relationships to interior caribou
Cattle and sheep
Kodiak Island, Aleutian Islands and Alaska Pe.
Development of present production
Matanuska Valley and Kenai Pe
Development in connection colonization project
Tanana Valley

(4) Fur farming investigations

(5) Wildlife investigations
Big game management
Establishment of management areas
Interior--buffalo
Interior--mountain sheep and goats
Interior--caribou
Kenai--moose
Southern--brown bear
Other

Predatory animal control
Coyote and wolf
Waterfowl
Control and management of nesting areas
Yukon Dalta, Upper Yukon Flats, etc.
Furbearers
Control and management of breeding areas

(6) Forest investigations

Management of interior forested area
Establishment of Interior National Forest
Industrial study and management of coastal forests

(7) Entomological investigations

Mosquito control
Reindeer and caribou warblefly eradication
Rabbit and grouse parasitism and disease
Parasites of game and fur animals

NOTE: The Alaska range or main area of Alaska comprises about 350 million acres, which is almost half that of the western range area of the continental United States. It is the largest area remaining in the possession of the United States of wildlife importance and natural conditions offering unusual possibilities for future recreational and other developments.

L. J. PALMER

Juneau, Alaska
Jan. 16, 1939

Chief of Bureau
Biological Survey
Washington, D. C.

Dear Sir:

I enclose herewith a report on wildlife in the interior submitted by Mr. Warwick and copy of a letter to Mr. Warwick concerning his future work.

I appeared before a meeting of the Alaska Game Commission now in session and discussed the accomplishment of research the past year and plans for the future. The Commission is heartily appreciative of our research efforts, want more of the same and approve of the proposed future program. My presentation to the Commission included the following:

Function of Research

"The project to which I am assigned is entitled "Investigations of the Wildlife Resources in Alaska". The purpose is to develop information concerning wildlife problems through scientific or systematic investigations and study for the use of the Alaska Game Commission essentially and such other agencies as are interested in wildlife administration. It is also to develop facts of purely scientific interest as supplemental to and a part of the more practical determinations. Chiefly, however, it is to determine facts by systematic observation and scientific methods in such detail as to give a complete picture of a problem, to properly record and report findings in such form that they may be of practicable understanding

and use by the administration of wildlife, which is chiefly the concern of this Commission.

On the present job I am alone as to technical assistance. Additional men, trained in range and wildlife investigations, are needed. We are limited by appropriations. I have proposed a program and staff for future work.

Accomplishments during the year
(between meetings of Commission)

1. Fairbanks CCC project -

20 miles of fence taken down and wire rolled in 10 rod rolls.

At last meeting it was agreed to retain lower lands of the former experiment station site. This area will be posted as a wildlife refuge, 12 signs having been sent to Warwick for that purpose.

Disposition of wire - suggested 10 mi. to College; 3 mi. earmarked for Nunivak Island; remainder for wildlife agent premises.

2. Nunivak muskoxen and reindeer -

Objective and accomplishment - reference to report.

Status - The situation on Nunivak Island is satisfactory and further investigations will not be required in the immediate future. With Paul Ivanoff on the job to report to us from time to time, we can feel assured that due care and attention will be given as needed. The only question yet to be settled is that of fencing.

3. Kodiak bear, beaver and cattle -

Objective and accomplishment - reference to report.

Status - Action on recomendations - assignment of predatory animal hunters.
It was promised that we would return to Kodiak Island next summer (August and September) for a more thorough study of the beaver vs. cattle range and fish spawning relationships. This is another touchy problem and we should give at least two months to observations. A measure of damage if any and comparison of values should be made with a view toward making recomendations for future action.

Closed season on fur bearers recomended by people.

Game Commission house at Kodiak needs to be finished - all materials are there - employment of a carpenter and a plumber for a month or two required and labor to dig sump and well.

4/ Kenai moose -

Objective and accomplishment - reference to two reports.

Status - Survey of Kenai Peninsula for land use planning is first on list of projects recomended by the Alaska Planning Council.

All observations indicate a calf survival crop of less than 30%. Disproportionate number of cows to bulls and abnormal crop. Messrs. Odale and Nelson (guides) and Andrew Berg report a lot of moose ~~xx~~ calves seen last spring. They state the belief that 95% of the cows observed had calves and many cows were seen with twins. However, our observations this fall failed to show a high calf survival. Local observers continue to believe that the ~~xxx~~ moose calves are being killed off by black bears when they are newly born and still wobbly on their legs. A study, therefore, this spring (May 15 - July 15) is necessary to determine the number of calves born and the losses that probably take place during the first few weeks of life. During observations it is the thought that we should endeavor to kill perhaps a dozen black bears that may be suspected of preying on moose calves and examine their stomach for hooves and hair. Observation and examination of coyotes for suspected kill of moose calves is also suggested.

Future Projects for next year
(F. Y. 1940)

1. Kenai spring calving investigation during May 15 - July ~~X~~ 15 on Tustemena Lake unit in continuation of previous study made on that area. The further study to include:
Reconnaissance and grazing capacity determinations
Kill and examination of bears and coyotes during moose calving.
Determination per cent calves born and losses during first few weeks of life
Examination of vegetation changes due to beaver work
Observation of the habits of moose during calving and of the forage eaten

2. Kodiak bear and beaver vs. cattle grazing and fish spawning investigations during August and September. This is an obligation since it was promised the people of Kodiak last~~X~~ summer. The further study to include:
Reconnaissance of cattle ranges to determine character and quantity of forage being produced
Comparison of undisturbed areas to those changed by the work of beaver for measure of damage to forage or improvements
Observation of the occupation of streams by fish and the effects of changes in the water areas by beaver work
Determination of the spread of beaver and the area actually occupied by them and of the trend in future occupation

3/ Interior buffalo - observations to be made by Warwick during the summer for preliminary information as to the number of animals and their habits on the range and to learn if possible

the extent of the seasonal ranges.

This preliminary investigation to be followed later and as time permits by a detailed forage study and reconnaissance.

Other projects that suggest themselves for future attention

a. Observation of sheep and wolves in the Little Delta region in relation to the buffalo development - a winter study.

b. Reconnaissance of the Goodpaster country to determine its suitability as range for buffalo or elk vs. cattle.

c. Observations of beaver and other fur bearers in the Bristol Bay area vs. fish spawning, reindeer grazing and bird nesting. To follow Mr. Dufresne's visit and preliminary observation as to needs this coming summer.

d. Reconnaissance of the Matanuska Valley range for livestock grazing vs. wildlife occupation.

e. Reconnaissance of the Healy River range for livestock grazing vs. wildlife occupation.

f. Investigation of moose occupation on the Moose Refuge unit via Moose River and Chikaloon River.

g. Investigation of moose occupation in the Katchemak Bay unit via the Caribou Hills and Homer.

h. Further investigation of S.E. Alaska deer and goats to determine their range occupation, habits, forage eaten and losses.

i. Gull and bald eagle investigations to determine the nature and extent of their depredations on other wildlife. (This is a desired study by the Wash. office of the Biol. Sur.).

j/ Investigation of bird nesting grounds - project will probably be handled by Goldman in charge of the Pacific Flyways.

k. Investigation of fur bearers - probaly in conjunction with other projects and work of the Petersburg Exp. Sta.

l. Reindeer vs. Caribou observations - probably in conjunction with other projects.

m. Continuation of tundra quadrat studies.

n. Upland game birds and rabbits - probably in conjunction with other projects.

o. Mink vs. muskrat occupation - to determine which is the more important in such sections where the question has been raised.

p. Examination of areas in 3rd Division to determine suitability for elk and buffalo.

Comments

In all this, concerning projects that should be tackled, I wish to stress the importance of considering them at this time chiefly from a view point of economic values. By economic values I mean not only money returns but also equally as important the aesthetic, recreational and educational values. All our problems have come about due to the pressure of settlement demands on our wildlife occupation. How shall settlement and its cultural development fit with wildlife and to what extent shall each give way to the other. Our aim should be a suitable maintenance of both on a basis of econimic need, that is, the greatest return which is probably a compromise consideration and maintenance of both to varying extent. In some cases wildlife may be the minor consideration, in other the proposed cultural development. We must decide on the basis of factual findings which is the more important and plan accordingly?

It was pointed out to the Commission that the number of projects needing attention could not possibly be handled by one man and that additional personnel was imperative. Accordingly a resolution to the effect that greater appropriation and personnel be provided for Alaska wildlife research was made.

Very truly yours,

Pr. Biologist

Juneau, Alaska

November 15, 1938

A PROPOSED WILDLIFE RESEARCH PROGRAM FOR ALASKA

- - - -

L. J. Palmer
Principal Biologist

OBJECTIVE

For the purpose of investigating the wildlife occupation, environmental conditions, and the wildlife performances and needs in Alaska, especially as influenced by human settlement, with a view to the most practicable administration for the maintenance of the specie or species of wildlife, for the production of an annual crop to be harvested for the benefit of wildlife maintenance itself, as well as its aid to colonization and settlement.

JUSTIFICATION

In the states having an aggregate area of about three million square miles, the Forest Service operates twelve regional forest and range experiment stations, at a minimum expenditure of at least $100,000 per station, per year. These stations conduct research along three lines--namely: forest growth and utilization; erosion control, and stream flow, and range management. In proportion, each station covers an area of about 250,000 square miles. In Alaska, with an area of approximately 590,000 square miles, or twice that covered by any one station in the states, no experimental station is now maintained.

In Alaska, the timber growth is largely virgin, and the chief problem is one of marketing the produce. There is also a question of disposal of a considerable amount of over-mature and dying trees and possible improvement of stand through thinning and replacement to younger growth. Research in forest influences applies generally, perhaps, in so far as the cover is of continental importance and effects, or locally as it concerns the injury by fires, large scale mining operations, and excessive clearing by settlement. Wildlife and range research, on the other hand, looms large and is a major need. Wildlife problems are an issue throughout the Territory; domestic grazing problems concern particularly the reindeer along the Bering Sea-Arctic coast cattle and sheep raising in the Kodiak Island group, Alaska Peninsula, and possibly a future grazing development in the interior.

The wildlife of Alaska is a major asset, not only locally, but to the states as well. The value of the fur catch alone annually sent to the states is approximately $2,000,000. The value of big game animals for hunting, recreational enjoyment, and observation is incalcuable. Its many unique wildlife features that occur no where else makes it all the more imperative that Alaska be given its share of research attention. Such features, for instance, are the Kenai moose, the Alaska brown bears, the Dall sheep, the Rocky Mountain goats, the large herds of caribou, the high quality and variety in production of furs, the muskoxen, the promising development of a large buffalo herd of superior sized animals, and the rich bird life. The Territory, as a whole, is a vast nesting and breeding ground for numerous water fowl, and thus a reservoir for production of ducks, geese, and other game birds annually flying southward to furnish sport to the hunters in the states.

In the settlement and tendency toward exploitation of this wildlife resource, many local problems have developed. The local and national values, especially in looking forward to the future, certainly justify an annual expenditure of $75,000 or possibly $100,000 for research in handling Alaska's wildlife. As compared to expenditures in the states on similar projects, this amount is very modest.

Local problems that require prompt attention include such questions as:

(1) How to maintain the Kenai moose herds in suitable productiveness in view of threatened colonization and settlement.

(2) How to settle the controversial question of conflict between brown bear maintenance, and cattle and sheep raising on the Kodiak Island group, so that both may survive.

(3) How to improve conditions for the maintenance of Southeastern Alaska deer in view of settlement demands and severe winter losses during some years.

(4) How to improve conditions for the maintenance of Dall sheep and the mountain goat in view of settlement demands, loss from predators, and the question of possible loss from disease and parasites.

(5) How to safeguard against the encroachment on the migratory caribou by the growing reindeer herds and what plans to pursue in seeking to separately maintain these two animals.

(6) How, and to what extent, maintain the Alaska brown and grizzly bears in view of settlement and other range needs.

(7) How to compromise in the maintenance of beaver where there is a question of conflict with fish spawning streams and the use of grazing lands for cattle and sheep production.

(8) How best to develop the muskoxen production in relation to other range use, such as by reindeer or cultural occupation by the Eskimos.

(9) How best develop for use the introduced buffalo herd in the interior and the elk on Afognak Island.

(10) How to improve conditions for the maintenance of a maximum production of waterfowl in view of encroachments by settlement and probable losses from predacious birds and animals.

(11) How to maintain and increase the present production of furs

(12) How to improve the wildlife occupation through artificial plantings on areas that are now under-utilized.

REMARKS

While I was in the Washington office of the Forest Service just prior to transfer to the Biological Survey, and leaving for Alaska, an item for the next year's budget estimates of $100,000 was included for the establishment of a forest and range experimental station in Alaska. What has become of this item I do not know. But that the Forest Service eventually hopes to establish a research station in Alaska is evident. A Biological Survey wildlife experiment station has the greater justification in view of the fact that wildlife presents the major problems in need of investigation. Incidently, Dr. Shantz in charge of the division of wildlife research of the Forest Service spent considerable time in Alaska this summer looking things over. I know that Regional Forester Heintzleman is especially keen on having the Forest Service undertake wildlife studies in Alaska.

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Law enforcement alone is inadequate to maintain Alaska wildlife in conformity with other land uses. Enforcement without consideration of other needs is prone to get into difficulties. While absolutely necessary, it is not the entire answer. Management planning based on a thorough investigation of the individual local problems and of the needs of the wildlife species concerned is essential as a basis for regulation. The term management as applied to wildlife, is abhorent to some, but it is an avenue of scientific approach to the handling of a problem. A lot of people have little love for regulation anyway, and an approach on a management basis is more apt to win popular approval.

There are two kinds of research, one that determines facts of purely scientific interest, and the other that seeks such information as will be of immediate and practicable application to administration. It is with the latter that we are most concerned at this time, in the investigations of the wildlife resources of Alaska. Both lines of research are important, and supplemental to each other, but emphasis

should be placed on studies of a practical nature, because of the pressing need for a prompt solution of local problems. A number of such problems are demanding attention, particularly as arising from the intrusion of settlement and the consequent impingment of cultural development on wildlife areas. Thus, we are faced with the question of proper land use and a need for careful planning. This is becoming more and more important in view of a growing interest in Alaska, and a probable future increase in settlement. Research of a practical nature, therefore, is becoming more and more imperative to enable a best adjustment between wildlife and cultural use, and to prevent an undue encroachment on a continued wildlife maintenance.

A general wildlife survey in Alaska is desirable, including a determination of the forage cover, as well as the location, kind, and relative abundance of animals and birds. In survey of range, it is also desirable to differentiate areas best suited for other purposes, such as grazing of livestock, and farming. Reconnaissance of land where there are pressing local problems should be given first attention.

Proposed Projects and Financial Set-up

In the event consideration is given to the establishment of a Biological Survey wildlife station in Alaska, I propose the Following projects and financial set-up.

1. Washington office supervision
   - Salaries and expenses. $8,000.00
   - Miscellaneous. 600.00

2. Headquarters--Juneau or elsewhere as later determined to be best suited.
   Projects--Supervision and problems in general, including forage reconnaissance and wildlife surveys
   Principal Biologist in charge
   - Salary 5,600.00
   - Expenses 3,000.00

Assignment--L. J. Palmer

Clerk and Stenographer
Salary. 2,400.00
Office expenses 500.00

Assignment_____

3. Field headquarters--Juneau
Projects: S. E. Alaska deer and goats
S. E. Alaska brown and grizzly bear
S. E. Alaska fur bearers
Biologist
Salary. 3,200.00
Expenses. 2,500.00

Assignment_____

4. Field headquarters--Anchorage
Projects: Kenai moose and mountain sheep
Kodiak bear, beaver, and grazing problems
Afognak elk
Biologist
Salary. 3,200.00
Expenses. 2,500.00

Assignment_____

5. Field headquarters--Nushagak
Projects: Nunivak muskoxen
Bristol Bay beaver vs. fish
Caribou vs. reindeer
Yukon Delta waterfowl
Biologist
Salary. 3,200.00
Expenses... . . . . 2,500.00

Assignment_____

6. Field headquarters--Fairbanks
Projects: Interior buffalo
Upland game birds and rabbits
Migratory caribou
Interior fur bearers
Interior mountain sheep

Temporary assignment, J. W. Warwick
Salary. 2,400.00
Expenses. 1,000.00

7. Purchase of boat for operation on Skilak Lake, Kenai River, and Tustemena Lake--Kasilof River. 2,200.00

8. Purchase of boat for operation on the Kodiak Island group. 2,200.00

9. Purchase of boat for operation in the Bristol Bay--Nunivak Island--Yukon Delta area 5,000.00

Total estimate $50,000.00

Additional Projects to be Included Later

10. Waterfowl nesting grounds and predators throughout Alaska.
Biologist
Salary. 3,200.00
Expenses. 3,000.00

11. Aleutian Islands and Alaska Peninsula waterfowl, fur bearers, bears, and grazing problems.
Biologist
Salary. 3,200.00
Expenses. 3,000.00

12. Wildlife diseases and parasites in Alaska
Biologist
Salary. 3,200.00
Expenses. 3,000.00

13. Additional Washington office items 2,400.00

14. Increased item for Fairbanks, upon replacement of Warwick by a trained biologist . . 2,000.00
Total additional . . 23,000.00

Grand Total Estimate. . . .$73,000.00

SUGGESTED QUALIFICATIONS FOR RESEARCH EMPLOYMENT IN ALASKA

In the event an expanded wildlife research program is adopted for Alaska, and a staff of workers organized, the employment qualifications that would be most desirable include:

(1) Biology or forestry training at an accredited school.
(2) Some range management experience and education.
(3) Some knowledge of the science of animal husbandry
(4) A practical turn of mind.
(5) Civil Service rating.
(6) Ability to rough it in the field six or eight months of the year, and willingness to live under frontier conditions.
(7) A cooperative spirit.

In the matter of training for wildlife research, some knowledge in the following subjects is highly desirable: (1) Biology(including Mamalogy and Ornithology), (2) Botany (including General and Scientific), (3) Ecology (plant and animal), (4) Animal Husbandry (including feeding), (5) Range Management, (6) Diseases and Parasites, (7) Meteorology, (8) Soils, (9) Entomology, and (10) Economics.

In wildlife research, the environmental approach is emphasized. Likewise, in range management, the ecological aspects are stressed. Ecology deals with environment, with the growth and development of plant and animal communities. It is highly important in the study of wildlife. However, it is not the entire answer. Equally important is a consideration of the animal itself, its nature, habits, and functioning. Ahimal husbandry deals with the growth and development of the individual animal. A knowledge of traits and habits is essential. Thus, for instance, some animals are superior rustlers and get along better on a range; or, timidity, as with some fur bearers, may seriously interfere in the handling of a species where there is disturbance; or the migratory habits

of some species whether local or more extensive will require a larger acreage allowance per head for producing the species. Confinement in some instances, may result in heavy parasitism, some animals being more subject to such affliction than others. The attack of nose flies in reindeer is undoubtedly a cause for the characteristic range habit of the reindeer to move against the wind, often travelling as far as 25 miles during the day. Further, the food habits of thespecies is of vital concern and a major phase in wildlife or range management research. To learn the kind and amount of food eaten by the animal or bird is necessary to determine the number that may be produced safely or carried on any particular area.

As to the other features, a knowledge of the classification of plant, animal, bird, and insect life, is a basic requirement to an understanding of the forms dealt with. Since wildlife is dependent on its environment or surroundings for food, shelter, and movement, some knowledge of the factors that influence the composition of that environment are essential. Such include particularly the climate and soil. Finally, there is the human relationship in which it is desirable to know and understand in a general way at least the economic aspects of the problem of settlement, of national and community interests, and of land use as a whole, in which wild life production is an important part.

Some Economic Aspects of Proposed Projects.

[Concerning those upon which some work has been done by the present investigation.] ---

1. Kenai Moose

A major wildlife feature--considered to be the largest of its kind, both as to size of herd and size of animal. Presents an unusual opportunity for the study of a big game animal in its natural environment and the development of methods and principles in its management of probably far reaching effect, not only in maintenance of moose, but also in its application to other similar species of wildlife.

Occupies an area largely non-agricultural, and particularly suitable for wildlife production.

Furnishes an important item of food to local residents, including fishermen that winter in the country, and settlers seeking

homesteads. The cash value of the annual crop of moose between Tustemena and Skilak Lakes is estimated to be at least $50,000.00. (The local population furnishing hunters within convenient take of moose on Kenai Peninsula numbers approximately 3,580).

Furnishes hunting sport particularly to outside trophy seekers who spend thousands of dollars each year for transportation, hotel accommodations, and guide services.

2. Kodiak bear and beaver vs. cattle and sheep raising.

The Kodiak Island group in part possesses an excellent grass range suitable for the development of cattle and sheep raising. Such development has been initiated, but is threatened in the heavy kill of livestock by an increased brown bear population, and in former hay meadows being destroyed by the work of beaver.

There is estimated to be sufficient range on the Kodiak Island group for the annual production of beef valued at approximately $1,500,000.00.

The population of the islands (1930 census) is 1,568 inhabitants; the total area of the islands is 4,861 square miles.

Development of a livestock industry will enable increased settlement and the building of permanent homes.

Fishing comprises the chief industry of the islands. The maintenance of a few cows for milk and for meat is an inducement to the establishment of homes on the islands by those engaged in fishing during the summer months.

The production of beaver (planted on the islands) if properly controlled, is an added asset to the islands, which are otherwise largely lacking in fur. The Kodiak brown bear is world famous as a big game species, annually attracts hunters from all parts of the world, and needs to be maintained because of its unique interest and its value in the money locally expended by big game hunters for guide service, hotel accommodations, and transportation.

Nationally, the interest in the Kodiak bear is so great that the bitter controversies have been waged in newspapers and mag-

azines concerning a supposed threat to its existence by cultural development on the islands. Both beaver and bears have been accused of injuring fish spawning streams, a protest to that effect having been made by the United Fishermen of Alaska.

The Kodiak Island group in all phases of cultural and wildlife use presents one problem as a whole in economic development.

3. Nunivak Muskoxen.

A herd of thirty-one muskoxen planted on Nunivak Island in 1935 and 1936 has increased to 50. An increase to approximately 500 animals is likely eleven years hence, 1,000 animals fourteen years hence, and 3,500 twenty years hence.

Muskoxen formerly abundant in Alaska were exterminated a century ago. The introduction of the present animals was for the purpose of reestablishment as a game animal and to help conserve a species threatened with extinction.

Its future value will lie in its establishment on the Arctic coast as a game animal to be used under suitable regulation as an added means of subsistence for the Eskimos.

4. Interior Buffalo

A herd of 33 buffalo planted on Big Delta river, about 90 miles south of Fairbanks in 1928, has increased to approximately 150 animals. The range occupied has a capacity for at least 1,300 head.

The introduction was for the purpose of supplying the interior of Alaska with an additional big game animal, for utilizing a range otherwise largely lacking in grazing animals, and to build up a large herd of buffalo under natural conditions more readily available in Alaska than found in the States.

It is reported that the animals now being produced are of unusually large size and vigor.

Principal values-- An opportunity of building up a unique wildlife feature; helping to bring the buffalo back into our wildlife picture from its former point of near extinction; a fuller utilization of the range resource, and future revenue values as a big game animal.

5. S. E. Alaska Deer.

The deer in Alaska are confined to the Southeastern portion of the Territory, excepting recent plantings on Kodiak Island and near Cordova in Southern Alaska.

The deer, aside from the brown bears and mountain goats, represent the chief game animal in Southeastern Alaska. It is the most extensively hunted, and many people rely on its take for part of their winter subsistence. Such people include the local Indians, fishermen wintering on the beaches, fox ranchers, and some towns people.

About one-third of the population of the Territory or approximately 19,304 persons, (1930 census) reside in S. E. Alaska

6. Fur bearers

The Fourteenth Annual Report of The Alaska Game Commission to the Secretary of Agriculture, for the period July 1, 1937 to June 30, 1938 reports as follows:

"Revenues derived from the gathering of furs in Alaska are of such importance as to rank third among the leading industries, being exceeded only by the fisheries and the minerals.

Probably not less than 15,000 natives, women and children included, share in the average annual amount of $2,347,186.74 received from sales of pelts, in addition to which they use large quantities of inferior grades of local furs for garments and bedding.

A fifteen year average of the revenue returns of the various kinds of land fur animals is as follows:

1--Mink	$422,547.49
2--Red Fox	391,633.97
3--Blue Fox	372,912.14
4--Beaver	237,852.58
5--White Fox	237,380.42
6--Muskrat	222,858.55
7--Lynx	134,353.04
8--Cross Fox	84,095.33
9--Marten	83,411.00
10--Silver-Black Fox	68,433.88
11--Land Otter	53,336.60

12--Ermine	13,334.30
13--Wolf	10,313.41
14--Wolverine	5,862.65
15--Coyote	3,623.90
16--Polar Bear	2,416.87
17--Black Bear	2,349.88
18--Hare	153.84
19--Marmot	74.16
20--Squirrel	72.68
	$2,347,186.74

Total of all Kinds

A fur farming experiment station is now maintained at Petersburg by the Office of Experiment Stations. The station was established this year for the purpose of developing suitable practices in fur ranching.

7. Waterfowl

Alaska with a coast line of approximately 26,000 miles and innumerable inland water ways, sloughs, ponds, lakes and swamps is a vast nesting and breeding ground for a great variety of waterfowl, including ducks, geese, swan, crane, shorebords, seabirds and others. It is the summer terminus of two major American continent flyways. It is a reservoir for the production of a great many ducks and geese flying southward in the fall to furnish sport for hunters in the States. As such its value, while it cannot be specifically stated, is certainly very great.

8. Beaver vs. fish

Fishing is the leading industry of Alaska, the production being valued at approximately $50,000,000.00 per annum. Beavers are one of Alaska's most important fur animals. During the past fifteen years it has been harvested at the rate of about 15,000 pelts per year and has furnished an average income of $237,862.58 to trappers.

Injuries to fish spawning streams by beavers have been reported. On the other hand, some expression has been made that beaver may improve streams for spawning, especially for red salmon which is one of the most important species.

9. Caribou vs. reindeer

The caribou is the most important game animal in Alaska, its numbers having often been estimated at over a million. The reindeer her on the Bering Sea-Arctic coast were estimated as numbering better than one million animals in 1936. The caribou occur in interior Alaska, on the Alaska Peninsula, and along the Arctic slope, meeting the reindeer herds as they wander inland from the coast possibly for a distance of

six or more miles.

To the interior native, prospectors and settlers, the caribou is often a major means of subsistence. It is in many cases a principal factor that enables penetration of interior Alaska, by settlement. On the other hand, the destruction of caribou on the coast-range induced the introduction of reindeer.

The reindeer development is a promising but as must be admitted at the present time a dubious recourse because perhaps a lack of full appreciation of the economic implications. It seemed to assure the Eskimos of a certain subsistence in view of an evident game depletion.

The meeting of reindeer and caribou presents the question of relative importance and the needs of segregating these two animals as determined by the economic values involved.

L. J. Palmer
Principal Biologist